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THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—14TH YEAR. SYDNEY: SATURDAY, JANUARY 8, 1927. No. 2.

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EXPERIENCES ABROAD WITH SPECIAL REFERENCE TO INFANT WELFARE.[1]

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INTRODUCTION.

BEFORE touching on my own experiences abroad, I should like to mention the main objects and some of the outstanding features in the history of the child welfare movement.

There has been a widespread awakening of interest in the question of infantile mortality all over the world for which Holt[(1)] gives the three following reasons: (i.) Growth and expansion of the humanitarian spirit; (ii.) concern of modern states about depopulization; (iii.) great advances in preventive medicine in the last thirty years.

It should be thoroughly understood that the chief object of this infant welfare movement is prevention of disease and its hope lies in education concerning all health matters, but especially regarding ante-natal care, child hygiene, breast feeding, care of cow's milk in the home and provision of a standard as a guide for the modification of cow's milk for a child's use.

It was towards the end of the eighteenth century that the subject of infant mortality and its causes began to engage the attention of medical practitioners; even as early as 1748 (in Sweden) a royal decree directed attention of state authorities to the high infant mortality in Stockholm and elsewhere.

Early in the nineteenth century many writers commented on the theme of preventive medicine. In 1817 John Brunnel Davis whom Holt regards as the most prominent pioneer in keen thought upon infant mortality, stated that conditions associated with mercenary wet nursing were clearly recognized as the cause of most of the infants' deaths, maternal nursing as their best safeguard. He founded the only English dispensary and visitations of benevolent ladies among the poor. Compare the health visiting of today—England now has over two thousand health centres.

Infant mortality was greatly influenced by the creation of a huge manufacturing class owing to

[1] Read at a meeting of the Melbourne Pædiatric Society on July 14, 1926.

improvement in mechanical arts and machinery. The need for cheap labour brought thousands of women into workshops and other fields of activity. This caused:

(i.) Work away from home, in factories. Mothers neglected their children who were thus exposed to hand feeding and mercenary nursing.

(ii.) Factory life under insanitary conditions told severely upon the health of the mothers and consequently on the health of the children.

(iii.) Exposure to venereal infection either destroyed the child or ruined its health at the start.

Infantile mortality was vigorously discussed in Dublin in 1861, but France, alarmed by its low birth rate and high infantile mortality, led the way in this movement. In 1884 Marbeau founded the first *crèche*. In 1892 the first consultation for nurslings was organized by Pierre Budin in Paris as an adjunct to the maternity hospital. Infants were regularly weighed and examined and mothers instructed in infant nutrition and hygiene. Compare the position in Victoria in which recommendation has been made for a model centre in conjunction with the Women's Hospital, Melbourne.

In 1893 milk was distributed although breast feeding was encouraged and in 1894 milk depôts were established.

In 1902 a National League Against Infantile Mortality was held in Paris and in 1905 there was an International Conference of Milk Depôts in Paris.

Conferences were also held in other countries, such as England, Holland, Germany, America *et cetera*. After the National Conference of Infantile Mortality in London in 1906 Dr. Eric Pritchard started the first infant consultation in Marylebone.

In the younger countries of the world, such as New Zealand in 1907, this educative movement of preventive medicine was also begun, but on slightly different lines, the education of the upper and middle classes being tackled first, the problems of acute poverty and bad industrial conditions not presenting themselves so forcibly as in the old world. It was only in 1917 that the movement was started in Victoria.

In 1870 infantile mortality commenced to decline.

In 1869-70 Listerism was introduced and a special study of infant mortality from diarrhœal diseases was made, but since 1900 this decrease has been noticed all over the world, especially in countries where education is advanced. Infant welfare has become a twentieth century science.

The following illustration shows what welfare education and legislation did in early days:

In a small village, Villiers le Duc, in France, infant mortality was a stable zero from 1893-1903. During the period 1804 to 1854 the rate was 30% to 20%; from 1854 to 1863 it was 15%.

The Mayor was very interested in hygienic problems and applied certain rational principles to the welfare of babies in his district.

After he died his two successors took no interest in these matters and the infant mortality went up to 30% again. His son M. Morel de Villiers applied his father's methods to such good purpose that mortality rate fell and reached a stable zero for ten years.

The following are the methods introduced by the Mayor:

(i.) Insurance of every woman with child, married or unmarried, at the expense of the mayoralty by the declaration of pregnancy before the seventh month.

(ii.) The assurance of free medical aid out of a village fund in all cases adjudged dangerous by the midwife.

(iii.) A grant of one franc *per diem* out of the same fund to every woman remaining in bed six days after her confinement.

(iv.) Compulsory sterilization of milk, with an appropriate apparatus by all mothers or wet nurses unable to nurse their infants at the breast.

(v.) The systematic weighing of new-born infants every fortnight on a communal weighing machine as a check upon the infants' condition.

(vi.) The compulsory notification of any illness in the infant within twenty-four hours after its appearance.

(vii.) The withdrawal of qualification certifications from all wet nurses not complying with these regulations.

(viii.) The award of a bonus of 2½ francs to any nursing woman who could produce a one year old child in good condition as a result of her nursing during the period paid for.

Vital Statistics.

The general decline in infant mortality throughout the world is seen in the following tables and graphs.

Table I. shows the infant mortality in England and Wales from the year 1900 to 1921.[2]

TABLE I.

Year.	Deaths per Thousand Births.
1900	154
1901	151
1902	133
1903	132
1904	145
1905	128
1906	133
1907	118
1908	121
1909	109
1910	105
1911	130
1912	95
1913	108
1914	105
1915	110
1916	91
1917	96
1918	97
1919	89
1920	80
1921	83

Graph I. illustrates the decline of infant mortality in several countries. It is interesting to note that the decline is less marked where educative health measures are more backward.

The decline of infant mortality in the Australian States and in New Zealand since 1900 is shown in Graphs II., III., IV., V., VI., VII.

I am much indebted to Mr. Barkley of the Central Weather Bureau, Melbourne, for most of the following graphs and facts.[3]

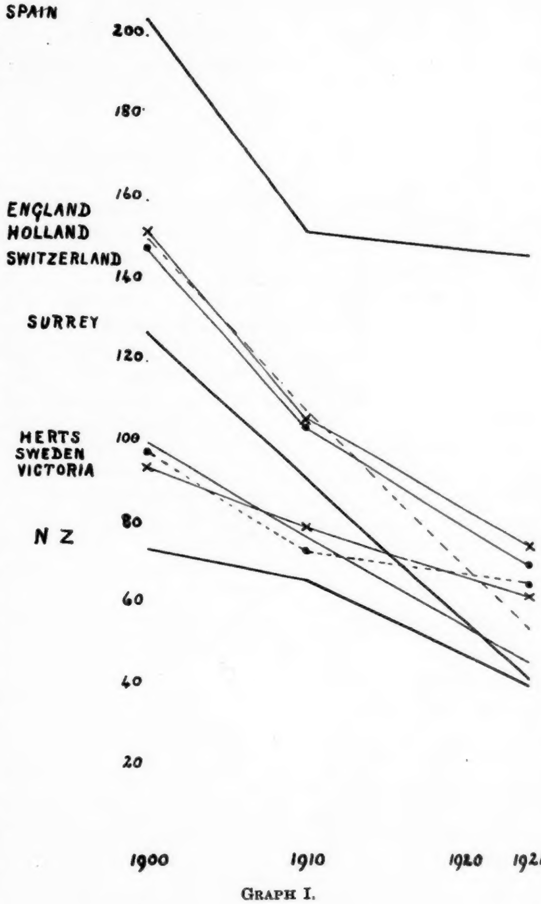
Graph VIII. illustrates the smooth values of the decrease in the infant death rates in Scotland, England, Victoria, New Zealand, Belgium, Holland, with the percentage rates of improvements *per annum*. Scotland, 2%; Victoria, 2·25%; New Zealand, 3·0%; Belgium, 4·5%; Holland 6%.

Concerning New Zealand and Victoria, dating from 1900-1924:

> There is an improvement in the smooth values for New Zealand of a drop to 39·9 per 1,000 births, *id est* an average improvement of 3·01% *per annum*. Victoria fell to 57·4, *id est* an average annual improvement of 2·25%, the difference in the rate between Victoria and New Zealand being 0·76%.
>
> There is a greater dispersion of deviation from the normal in Victoria than in New Zealand and also a greater variation in temperature and a higher absolute value. New Zealand, having a more even insular climate with lower range of temperature, shows a closer approach of annual rate to the mean value than Victoria.
>
> New Zealand started at 84 in 1900, Victoria at 100 deaths per 1,000 births. Considering the greater rainfall, lower and more even temperature New Zealand was starting on a very high figure.

Graph IX. illustrates the annual figures of the infant death rates in Victoria (under one year per 1,000 births), 1870-1924. It should be noted that the fall in infant death rate should not be dated from an unusual peak, as in 1907 which according to Dr. Watt's report:[4]

> provides a good illustration of the periodical fluctuations in the rate due to climatic and epidemic conditions, the infantile deaths from intestinal, respiratory and infective groups of diseases in this year being much above the average.



GRAPH I.

Graph X. illustrates the effect of climate on infant mortality. It shows:

> the annual curves for the infantile mortality rate in Melbourne compared with the temperature and rainfall. This graph shows that the deaths vary directly with the temperature, which accounts for 78% of variations and inversely with the rainfall which accounts for 22% of variations.

Density of population also influences infant mortality. In New Zealand the average density of all New Zealand cities is 2·5 persons to the acre. Density in Wellington is 3·5 persons to the acre. Density in Melbourne is 5·2 persons to the acre.

The industrial employment of women in New Zealand is small. The total for 1924 was 12,130. The ratio of female workers to male was 23:100. In Victoria the total number of women workers in factories in 1923-24 was 48,584. The proportion of female workers to male workers was 45:100.

In Table II. are figures of infant mortality due to diarrhœal diseases in New Zealand and Victoria.

Graph XI. illustrates "that the problems in regard to New Zealand and Victoria are quite different. In Victoria epidemic diarrhœa shows a maximum predominant; in New Zealand this is absent. In New Zealand the chief problem concerns respiratory disease." (E. P. Neal, *Journal of the American Statistical Association*, 1925.)

It is interesting to note that New Zealand has lowered its own figures, probably largely due to the activities of the Health Department together with the splendid educative work of the Royal New Zealand Society for the Health of Women and Children.

General Impressions Gained Abroad.

In 1923 I visited Canada and the United States and in 1926 I spent three months in New Zealand with Dr. Main at the request of the Victorian Government for the purpose of inquiring into causes of infant mortality.

Welfare work has a wonderful hold in both countries. The essentials are very similar, the preventive medicine measures being practically the same.

Expenditure.

A notable feature in both countries is the expenditure for infant welfare work. One is impressed in America with the organization. There is no lack of clerical help, excellent card systems and as far as possible coordination, though the latter is rather a difficult problem, especially in cities like New York. Toronto stood out as an excellent example, the activities being centrally directed from the City Hall by the City Medical Officer of Health. In New Zealand the Government is very generous and the people likewise. The total expenditure for the Plunket Society last year was £54,000 and the

Government grants and subsidies amounted to £24,000, the remainder being raised by voluntary effort.

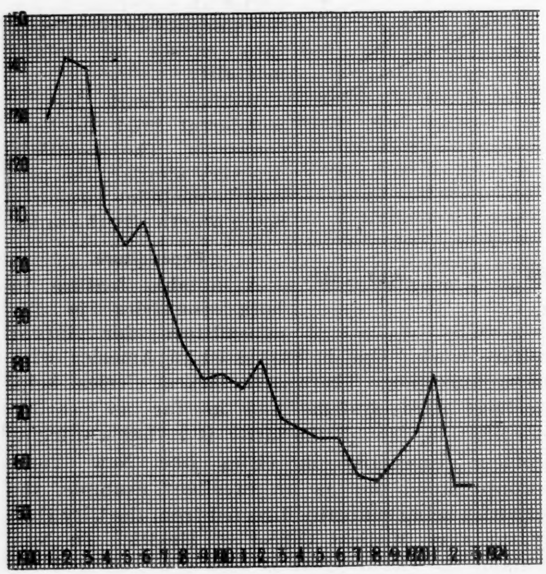
TABLE II.—SHOWING DEATH RATE PER 1,000 BIRTHS OF INFANTS UNDER TWO YEARS OF AGE FROM DIARRHŒA AND ENTERITIS IN EACH YEAR FROM 1900-1925.

Year.	New Zealand.		Victoria.	
	New Zealand.	Auckland.	Victoria.	Greater Melbourne.
1900	15	59	25·6	
1901	10	29	25·8	
1902	17	52	31·6	
1903	14	48	29·7	
1904	17	24	19·0	
1905	13	31	20·3	
1906	10	31	23·9	
1907	23	27	21·2	
1908	18	37	32·2	
1909	11	18	22·57	
1910	15	40	29·5	
1911	11	24	20·5	
1912	7	18	22·0	
1913	9	24	21·0	
1914	6	12	29·3	
1915	5	10	17·5	
1916	7	11	23·6	
1917	6	15	12·0	
1918	3	4	15·7	18·6
1919	3	3	15·6	18·1
1920	3	4	19·1	21·1
1921	5	7	20·4	20·0
1922	3	4	12·3	13·8
1923	3	3	17·1	18·6
1924	4	9	12·2	13·4
1925	*	3	13·6	13·9

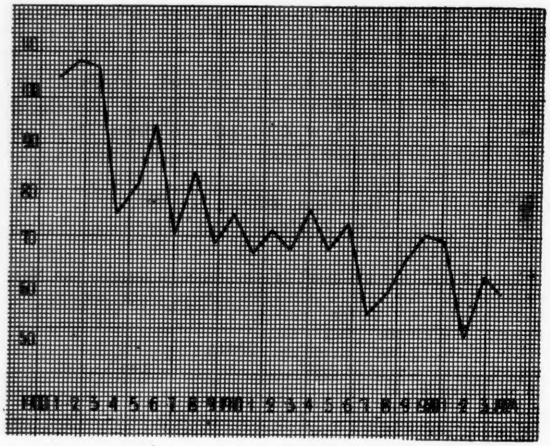
* = Figures not obtainable.

Training of Nurses.

In America the nurse, being considered an educator, is trained by the educating body, that is, the university, for nine months, after which time she receives, if successful, a diploma of public health nursing. She must be of a certain educational



GRAPH II.
Showing Infantile Mortality in Western Australia.

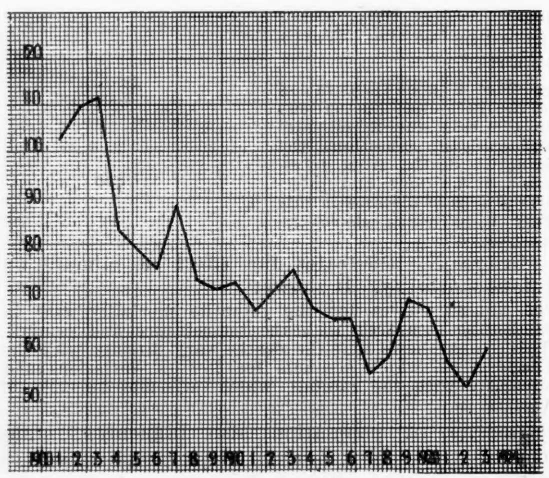


GRAPH III.
Showing Infantile Mortality in Victoria.

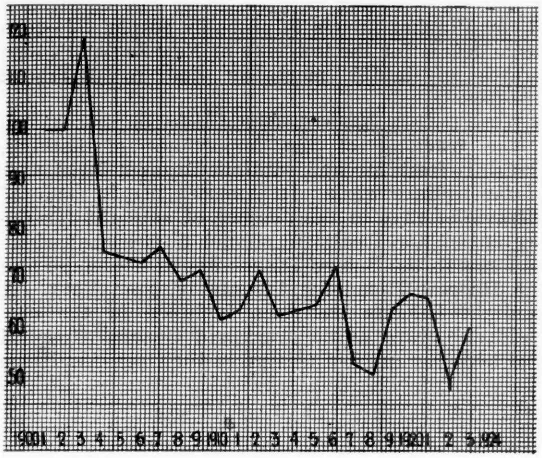
standard and have had a training in general nursing. She deals with different classes of health work, such as welfare and prenatal clinics, care of school and preschool children, antituberculous work, venereal disease and mental hygiene, her work not being confined merely to infant welfare. There was no residential training school in the places I visited.

In Toronto there is cooperation between the Childrens' Hospital and the public health nurses of the district by means of the hospital extension nurses who work in the out-patient hall. They take the name of every patient admitted and send it to the City Hall; within forty-eight hours a report on the home conditions of the patient is returned to hospital. The outpatients and discharged patients are followed up by the public health nurse of the district.

In New Zealand there are special nurses to do only infant welfare work. There are two types:



GRAPH IV.
Showing Infantile Mortality in New South Wales.



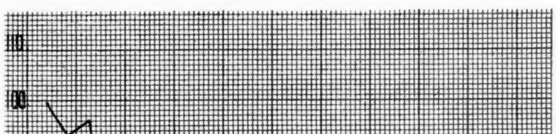
GRAPH V.
Showing Infantile Mortality in Queensland.

(i.) Nurses for district work—Plunket nurses—who have a previous general or midwifery training and in order to gain the Plunket qualification have done a further course of four or six months in a special residential training school with fourteen days' district work.

(ii.) Nurses for the babies in the homes—Karitane nurses—who have one year's special residential training, but no previous training. When they have been certificated, their activities are confined to care of the babies in the homes.

The Relationship of the Medical Profession.

It was extremely interesting in America, to meet such well-known pædiatricians as Dr. Alfred Hess, Dr. Gertzenberger, Dr. Palmer Lucas and others who are taking a leading part in this preventive medicine movement. In both Canada and the United States no centre is run without a doctor who medically examines the children and controls their dieting. The medical officers may be paid for full or part time service or they may be part time Health Department medical officers. If the part time medical officers are in private practice, an effort is made to secure the services of one who lives at the other end of the city. One provincial full time medical officer told me that he works from the point of view of the centres as educational. He lectures to the medical profession and uses the centres for demonstration.



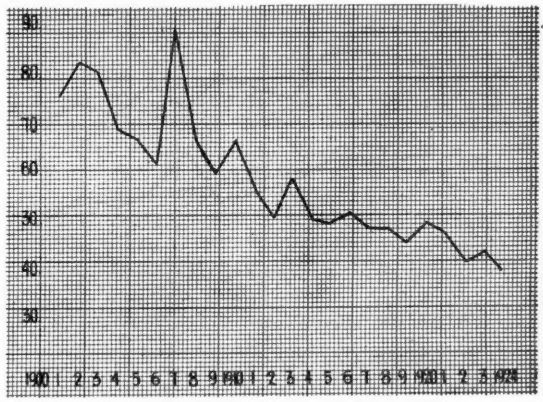
GRAPH VI.
Showing Infantile Mortality in South Australia.

In New Zealand there is a Medical Director of Child Welfare in the Health Department. Honorary medical officers attend the hospitals, but the dieting is left chiefly to the matron. There are no medical officers attending the centres, the dieting being carried out by the nurses.

Prevention of Disease.

Antenatal Care.

In America, clinics and maternity centres have been established for antenatal advice and examination of patients for some years; in New Zealand during the last year or so antenatal clinics have been developed as a section of the public Health Department working in cooperation with some of the Plunket centres and with the maternity hospitals in several of the large towns.



GRAPH VII.
Showing Infantile Mortality in New Zealand.

The objects of the antenatal work with regard to the infant are:

(i.) Reduction of infant mortality in the first month. (Australian figures show that over 50% of infant deaths under one year occur under the first month and of these 70% occur under one week.)

(ii.) Increase the number of breast-fed babies by maintaining the mother's health by general hygienic measures and regular medical observation in pregnancy, also by giving local attention to the breasts in the antenatal period.

Breast Feeding Campaign.

In Minneapolis in 1920 welfare workers were most anxious to show how bedrock natural feeding propaganda could lower infant mortality more

than anything else. Their claim was justified by the fact that the results achieved in this one year were as great as the results previously achieved over a period of five years.

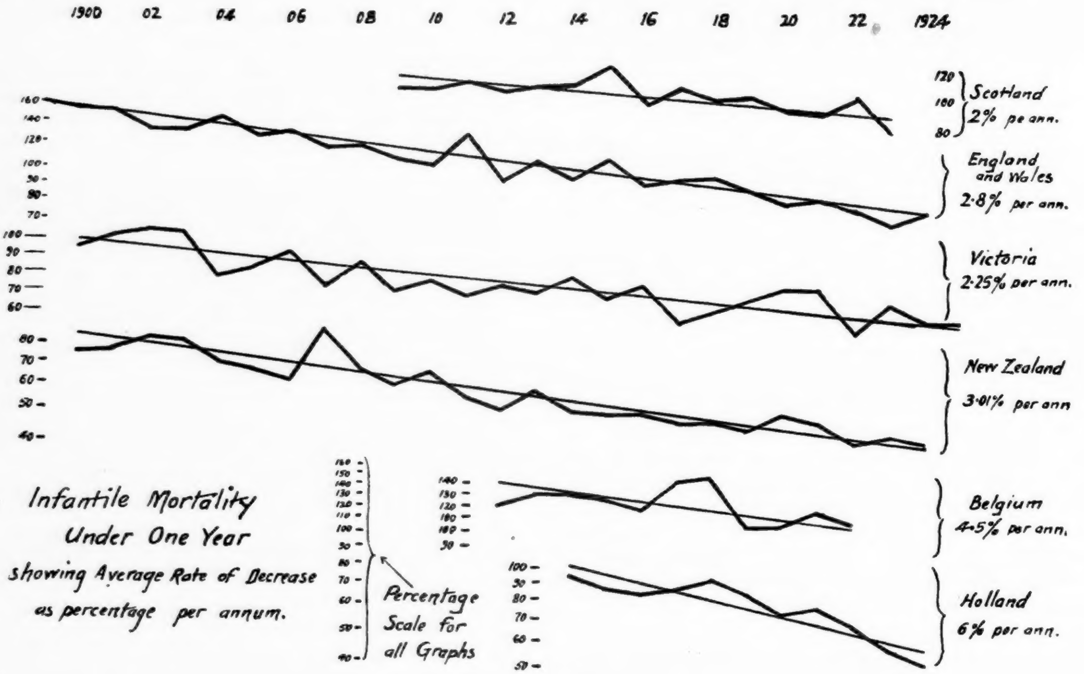
Attached to the Cleveland Well Baby Dispensaries are three so-called "expression nurses" who confine all their attention to management of difficult cases of breast feeding.

In New Zealand early notification of birth (within three days of birth) and the sending of daily lists of births to the Plunket nurses have increased the number of cases dealt with at an early age. The average number of new babies attending the Plunket centres in 1925 either entirely breast fed or fed on breast milk with a complementary feeding was 80%.

zation and scalding adopted under the supervision of the Plunket nurses is probably responsible to a large degree for the lowering of New Zealand's own figures of infant mortality due to diarrhœal diseases.

Hygiene of the Child.

The teaching of the importance of bathing, clothing, fresh air and sunlight forms a large part of the welfare work. In America use is made of ultraviolet rays in the absence of sunlight for the prevention and treatment of such diseases as rickets as I saw in the Babies' Dispensary at Cleveland and the Hebrew Home for Infants in New York. A sunlight balcony has been included in the new children's ward at the Auckland General Hospital and heliotherapy is a feature in the Open Air Home



Graph VIII.

Care of Cow's Milk in the Home.

In America bottled, graded milk mostly pasteurized is used for children. In Toronto the City Medical Officer of Health was very active in causing legislation to make it compulsory for all milk used in the city to be bottled, pasteurized and stored in cool chambers. All pasteurizing depôts and the premises of all vendors of milk are inspected often and at regular intervals. In ten years the infantile diarrhœal mortality was definitely reduced. In New York Dr. Alfred Hess told me that he seldom saw a patient with epidemic diarrhœa, though it was very prevalent fifteen years ago. He expressed the opinion that the present decrease might have been influenced by the use of a purer milk for infants.

In New Zealand the milk supply for infants is not graded or always bottled, but the home pasteuri-

in Christchurch for the children of tuberculous parents.

Routine Examination of the Child.

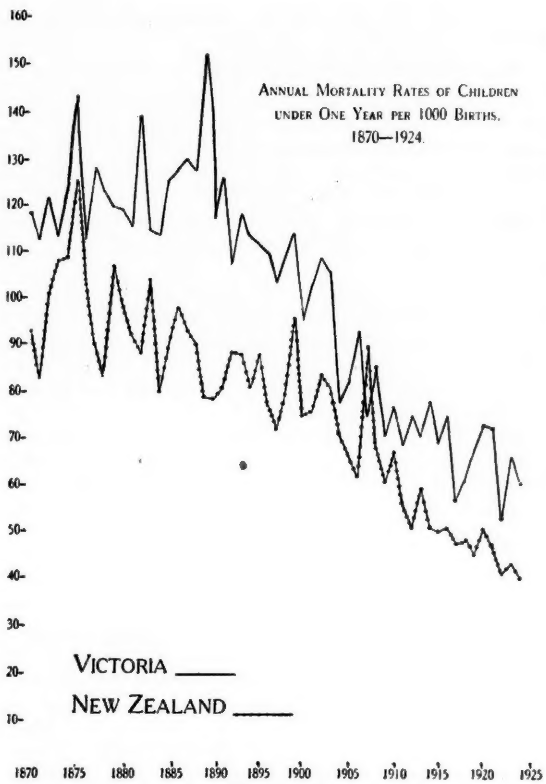
In one of the New York clinics the medical officer examines the child on admission at three months and at six months of age as a general routine for early detection of disease.

Posture Work.

In New York at the same clinic mothers are taught how to exercise their babies, especially in cases of constipation, after dietetic errors have been corrected and also to prevent deformities occurring by simple means such as not allowing the children to sit too long in hard, high chairs *et cetera*.

Antidiphtheritic Campaign.

An antidiphtheritic campaign is carried out in many baby health centres; for example the Babies'



GRAPH IX.

Dispensary and Well Baby Clinics in Cleveland. It is interesting to note that this work is also being carried out in the City Health Centres in Melbourne.

Dental Work in Clinics.

In both America and New Zealand some of the health centres work in conjunction with dental clinics for mothers before confinement, nursing mothers and preschool children. In Wellington there is a dental clinic where young women are trained for two years to deal specially with the preschool child, stoppings and extractions being performed and education being given in prevention of dental caries.

Care of the Preschool Child.

Care of the preschool child is one of the features of American welfare work, the problems of malnutrition, poor posture, antidiphtheritic treatment and dental work being chiefly tackled. Special nutritional clinics are attached to the New York centres with attractive displays of correct meals, much stress being laid on the importance of fresh fruit, vegetables and milk.

SPECIAL IMPRESSIONS GAINED ABROAD.

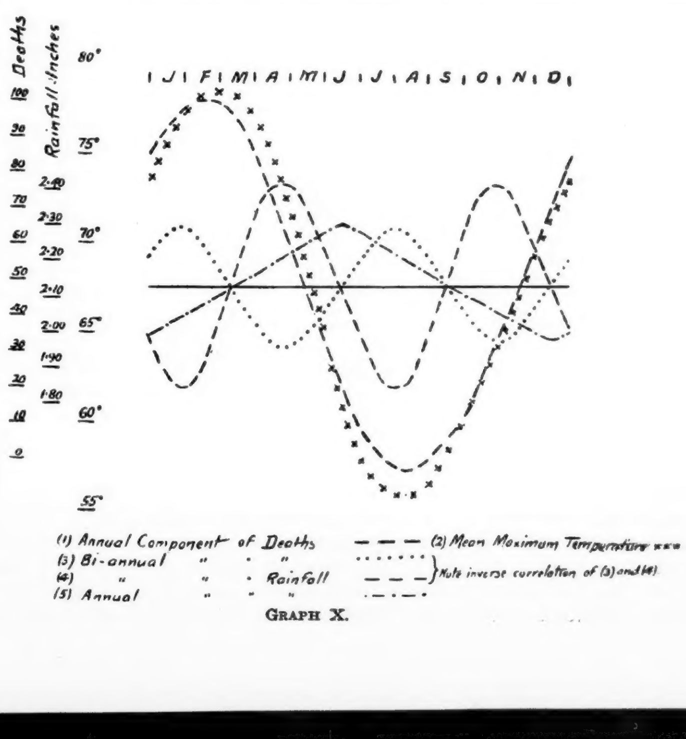
By far the most important and telling work in this welfare movement is mothercraft. As stated by a leading Plunket worker, it is the educative value of this mothercraft work to the mother, the nurse and the medical student and not the difference in artificial feeding, a sideline and always controversial, that has made for success in New Zealand.

Breast Feeding.

Special care to promote breast feeding is given in the antenatal period and also to the nursing mother. Regulation of feeding is insisted upon, the three hourly or four hourly intervals being used. Dr. Beck, of Brooklyn, finds more success with the three hourly interval, but he is chiefly dealing with babies in the earlier period of life. In New Zealand the four hourly interval is favoured with excellent results, though the practice is varied with the individual baby, no baby under six pounds in weight being put on feedings every four hours. I studied many charts and the results seemed satisfactory. Each breast is stimulated, usually at intervals of four and not eight hours, the baby emptying one breast completely and then being put for a varying time (generally a few minutes) to the other breast, beginning on alternate breasts at each feeding. The Director of Plunket Nursing stated that she was convinced that the majority of normal babies with full milk supply do better when fed every four than every three hours.

Breast Feeding in Difficult Cases.

In New Zealand there are six excellent mothercraft homes where the mother and baby go for a period varying from one day to three weeks. The mother is put on a daily routine of exercise, rest, fresh air, three good meals daily and plenty of



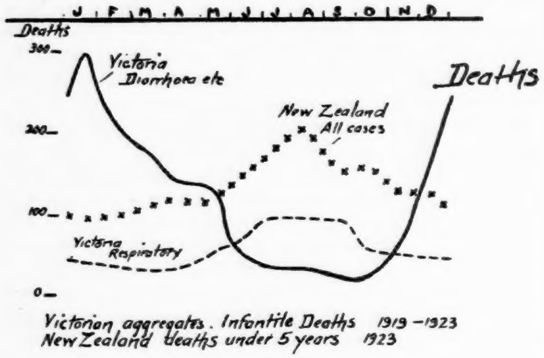
GRAPH X.

fluid to drink. Regular stimulation of the breasts is done twice or three times a day according to the amount of milk present and the condition of the mother. Test feedings are done for guidance and the results are charted. Stimulation, except by the sucking baby, is gradually lessened until the mother is discharged from the home.

The following methods of stimulation are used:

(i.) Douching the breasts with hot and cold water alternately for about ten minutes. This is usually done best by the mother herself.

(ii.) Manipulation by stimulation of the parts surrounding the breasts and by stimulation of the soft tissues of the breasts. This must be done only by a skilled person.



GRAPH XI.

(iii.) Expression, manually or by breast pump which is rarely used.

(iv.) Strong suction by the baby at regular intervals and complete emptying of the breasts.

The breasts must always be emptied before manipulation.

On each record chart is an average weight line where the birth weight is taken as seven and a half pounds and the normal average gain calculated by daily test feedings from one hundred and fifty or more cases and also from German figures.

We need to find an average weight line for our Australian children and to form Australian height-weight-age tables.

In Cleveland the nurses are allowed only to express the breast milk, but not to do deep manipulation.

Artificial Feeding.

In the American centres I visited the plan used in Toronto seemed to be more or less adopted elsewhere, that is, high percentage protein feeding. The following facts are used for guidance in the centres when cow's milk is used for the baby. The child needs:

The protein of one and a half ounces of cow's milk per pound of body weight daily; the fat of one and a half ounces of 4% milk per pound body weight daily; fluid, three ounces per pound body weight up to four ounces every twenty-four hours; sugar, one ounce under twelve pounds body weight and one and a half ounces over twelve pounds body weight.

To obtain the different fat percentage of milk the following methods are adopted:

The milk delivered in the bottle is 4% milk.

To obtain 3% milk one quart of 4% milk is allowed to stand for six hours, then the top two ounces are skimmed off and the milk left is shaken and used.

To obtain 2% milk one quart of 4% milk is allowed to stand for six hours, the top four ounces are skimmed off and the milk that is left is shaken and used.

To obtain 1% milk one quart of 4% milk is allowed to stand for six hours, then the top eight ounces are skimmed off and the milk is shaken and used.

Lactic acid milk is used freely, especially for delicate and premature babies.

The following table is an example of Holt's method of feeding illustrating the preparation of the milk mixture in large quantity for several feedings and also the fairly rapid increase to a high protein feeding:

TABLE III.—SHOWING HOLT'S METHOD OF FEEDING.

Number of Feeding.	Milk in ounces.	Sugar in ounces.	Water in ounces.	Flour in even teaspoonful.	Total in ounces.
1	3	½	7	0	10
2	3¼	½	6¾	0	10
3	3½	½	6½	0	10
4	3¾	½	6¼	0	10
5	4	½	6	½	10
6	4¼	½	5¾	½	10
7	4½	½	5½	½	10
8	4¾	½	5¼	1	10
9	5	½	5	1	10
10	5½	½	4½	1½	10
11	6	⅓	4	2	10
12	6½	⅓	3½	½	10
13	7	¼	3	¾	10
14	7½	¼	2½	1	10
15	8	¼	2	1	10

Number 1 might be used for a new-born baby, the food being increased to Number 2 and Number 3 *et cetera* every few days according to appetite and digestion. With an average child Number 7 would usually be reached by the end of the first month. When Number 8 is reached increase should be made more slowly. Sometimes for a week or even two or three weeks a child will gain and be quite satisfied, a slight increase in amount being the only change. Number 11, four-fifths milk, one-fifth gruel of flour and water is usually reached by the eleventh month.

The rapidity of increase depends on the weather, the activity of the child, the dentition and the appetite. As in most feeding tables grading is a feature of this one.

Dr. Gertzenberger has made popular a mixture he has composed using dried milk, substituting other fat for the fat of cow's milk. Opinions vary regarding its efficacy.

In the New Zealand centres Sir Truby King follows Rotch in preparing the so-called humanized milk, that is, a low percentage protein feeding. The mixtures are made up for several feedings, usually

for twenty-four hours. Dr. Bruton Smith, of Auckland, on the other hand, follows the higher protein feeding method. The results of both methods appear successful.

Sir Truby King sums up his method of feeding as follows:

It is the practical use of the combined caloric estimation and percentage composition, in conjunction with protein ratio as the only firm basis for infant feeding.

To obtain the theoretical number of calories usually needed he calculated from the age and weight as follows:

Weight multiplied by 50 during the first month.
Weight multiplied by 50 during the second month.
Weight multiplied by 50 during the third month.
Weight multiplied by 47 during the fourth month.
Weight multiplied by 45 during the fifth month.
Weight multiplied by 44 during the sixth month.
Weight multiplied by 43 during the seventh month.
Weight multiplied by 42 during the eighth month.
Weight multiplied by 42 during the ninth month.
Weight multiplied by 40 during the tenth month.
Weight multiplied by 40 during the eleventh month.
Weight multiplied by 40 during the twelfth month.

During the period of rapid gain in weight in the earlier months of life the children need more calories as shown in the above table. To obtain these figures Sir Truby King summed up normal cases attending the Plunket centres and also studied the literature on the subject. He found that if the food was pushed above this caloric value the babies' motions were not quite normal.

The following extract is quoted from a lecture given to the nurses at the Karitane Hospital, Dunedin:

Caloric estimation is not a method of feeding but a method of checking feeding.

Reasons for Using Caloric Estimation.

First.—Caloric estimation helps the nurse by giving her a definite argument to appeal to an intelligent parent's reasoning faculties as to why a baby's food should not be changed. The nurse may know that a child is not making satisfactory progress, but may not be able to definitely state why. This she may do, if she works out the theoretical and actual calories.

Second.—In difficult feeding cases one can balance the baby's need according to age with his needs according to weight and thus guard against over taxing his digestion.

Third.—By caloric value one can arrive at or definitely calculate the fuel value of any food the baby is getting and then compare it with mother's milk and make the necessary alterations.

Fourth.—Caloric estimation serves as a guide against under or over feeding, also as a check on mistakes and a preventive against mere slipshod guessing, when determining and grading ahead the progressive food allowance for the baby. The protein ratio equals the proportion which the calories of protein bear to the summed up calories of fats and sugars. The only instance when a higher protein is indicated is when a baby is proven to be radically under weight for its age. The percentage of protein can then be raised to say 1·7% by addition of more milk. To sum up, Nature's standard should be adhered to. No infant food is correctly proportioned for normal growth and development of an infant unless it yields approximately 6 to 7% carbohydrate, 3 to 4% fat and 1 to 2% protein.

Reasons quoted by Sir Truby King for giving a low percentage protein are:

(i.) The main purpose of "humanizing" milk is to reduce flesh forming material of cow's milk to about one-third.

(ii.) To prevent great excess of protein from over taxing both the digestive organs and the kidneys.

(iii.) The quicker the animal grows the more protein it needs. Compare human milk, protein 1·5%, rabbit's milk, protein 14%.

Dr. Wardlaw, of Sydney, finds that from analyses of many samples of human milk the protein percentage in normal cases decreases as the age and weight of the child increase, dropping from an average of 3·3% to 1·86% in the first week and reaching 1·35% about the thirtieth week.[5]

Humanized Milk.

There are four different modifications of milk, varying with the need of the child.

Humanized milk Number 1 contains whey, top milk, sugar of milk, lime water and water in suitable amounts.

Humanized milk Number 2 is a diluted mixture with "top milk" which is set for a varying number of hours with the addition of sugar of milk, lime water and water.

Humanized milk Number 3 contains milk, New Zealand emulsion, sugar of milk, lime water and water.

Humanized milk Number 4 contains dried milk suitably modified, New Zealand emulsion and water. This is used only in emergencies or for travelling purposes.

These forms of milk in all cases undergo home pasteurization, fresh element such as orange juice being added to the diet. New Zealand emulsion is a specially prepared cream consisting of 50% fats and oils, 40% sugars and 10% water. The fats consist of animal fat over 75% butter and cod liver oil and vegetable fat, mainly peanut oil.

Methods of Calculating Composition of Milk.

Table IV. is an example of finding the percentage composition of a milk mixture of cow's milk thirteen ounces, sugar of milk one ounce, lime water one ounce, emulsion one ounce and water sixteen ounces as calculated by Sir Truby King and below is his method of caloric estimation of the same mixture.

Caloric Estimation.

One ounce of sugar = 116 calories, therefore 1% of one ounce $= \frac{116}{100} = 1\frac{1}{6}$.

One ounce of protein = 116 calories, therefore 1% of one ounce $= \frac{116}{100} = 1\frac{1}{6}$.

One ounce of fat = 266 calories, therefore 1% of one ounce $= \frac{266}{100} = 2\frac{2}{3}$.

$$
\begin{aligned}
\text{That is } 203 \times 1\tfrac{1}{6} &= 236{\cdot}8 \\
45{\cdot}5 \times 1\tfrac{1}{6} &= 53 \\
95{\cdot}5 \times 2\tfrac{2}{3} &= 254{\cdot}6 \\
\hline
&\ 544{\cdot}4 \qquad \text{Calories} = 544{\cdot}4.
\end{aligned}
$$

The following is an example of how to find the amount of the different ingredients necessary for a given amount of mixture of a given percentage:

ILLUSTRATIONS OF SIR TRUBY KING'S METHODS OF CALCULATION.

TABLE IV.

Ingredient.	Percentage Composition.			Amount in Ounces.	Carbohydrates.	Fats.	Proteins.
	Carbohydrates.	Fats.	Proteins.				
Cow's Milk	5	3·5	3·5	13	65	45·5	45·5
Milk Sugar	98	—	—	1	98	—	—
Lime Water	—	—	—	1	—	—	—
Emulsion	40	50	—	1	40	50	—
Water	—	—	—	16	—	—	—
				30	203	95·5	45·5
				Percentage Composition =	6·7	3·1	1·5

TABLE V.

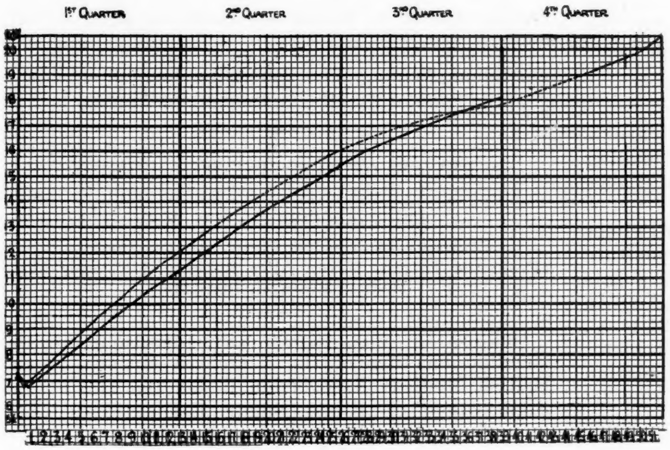
Ingredient.	Percentage Composition.			Amount in Ounces.	Carbohydrates.	Fats.	Proteins.
	Carbohydrates.	Fats.	Proteins.				
Cow's Milk	5	3·5	3·5	4	20	14	14
Fat	—	50	—	⅓	—	16·6	—
Carbohydrates	98	—	—	½	49	—	—
				10	69	30·6	14
				Percentage Composition =	6·9	3·0	1·4

TABLE VI.

Humanized Milk 2.	Whole Milk.	Sugar Percentage.	Fat Percentage.	Protein Percentage.	Calories per Ounce.	Caloric Value Mixture.
39 oz.	1 oz.	6·8	3·4	1·4	18·6	745·2
38	2	6·8	3·4	1·5	18·7	749·9
37	3	6·7	3·4	1·6	18·7	749·8
36	4	6·7	3·4	1·6	18·7	749·8
35	5	6·6	3·4	1·6	18·6	745·2
34	6	6·6	3·4	1·7	18·7	749·9
33	7	6·5	3·4	1·7	18·6	754·2
32	8	6·5	3·4	1·8	18·7	749·9
31	9	6·4	3·4	1·8	18·6	745·2
30	10	6·3	3·4	1·9	18·6	745·2

TABLE VII.

Days.	Ingredients (in ounces).					Percentage Composition.		
	"Glaxo."	Emulsion.	Milk.	Milk Sugar.	Water to	Carbohydrate.	Fat.	Protein.
First	1¾	1	—	1	30	6·9	3·1	1·4
Second	1½	1	1	1	30	6·7	3	1·3
Third	1¼	1	4	1	30	6·9	3·1	1·4
Fourth	¾	1	7	1	30	6·7	3·1	1·4
Fifth	⅓	1	10	1	30	6·7	3·1	1·4
Sixth	⅛	1	12½	1	30	6·9	3·2	1·5
Seventh	—	1	13	1	30	6·7	3·2	1·5



GRAPH XII.
Illustrating the Average Weight in 150 recorded cases in the New Zealand Plunket centres. Diet = Humanized Milk Number 2. Dotted line = standard average weight.

To make a mixture of 10 ounces containing carbohydrate 7%, fat 3%, protein 1·4%.

(*a*) Multiply the percentage of the desired mixture by the number of ounces of the mixture. This gives the total amount of carbohydrate, fat and protein.

Example: Carbohydrate 7, fat 3, protein 1·4 multiplied by ten gives 70 of carbohydrate, 30 of fat and 14 of protein.

(*b*) Divide the amount of protein thus obtained by the protein in the original milk. This figure gives the amount (in ounces) of milk needed.

Example: 14 divided by 3·5 equals 4, that is four ounces of milk are required in the ten ounce mixture.

(*c*) Subtract the amount of fat given by the above number of ounces of milk from the total fat of the desired mixture.

Then divide this by the percentage of fat present in the fat ingredient. This gives the number of ounces needed of the fat ingredient.

Example: Carbohydrate 5, fat 3·5, protein 3·5 multiplied by 4 gives 20 of carbohydrate, 14 of fat and 14 of protein. Four ounces of milk contains 14 of fat. The amount of fat needed in a ten ounce mixture would be 30 – 14 or 16. As we are dealing with a 50% fat, approximately one-third of an ounce of fat is needed.

(*d*) Subtract the amount of sugar given by the above number of ounces of milk from the total amount of sugar in the desired mixture. Divide this by the percentage of carbohydrates present in the carbohydrate ingredient. This gives the number of ounces of the carbohydrate ingredient needed.

Four ounces of milk contains 20 of carbohydrate. The carbohydrate needed in the ten ounce mixture would therefore be 70 – 20 = 50. We are dealing with a 98% mixture of carbohydrate and the amount of carbohydrate needed will therefore be approximately one-half of an ounce.

The mixture is, of course, made up to ten ounces with water.

Table V. shows that the desired mixture has been obtained by the above method.

Grading.

Grading is a prominent feature of the New Zealand method (Plunket) of infant feeding. No radical change in diet is made unless the baby is distinctly upset. Grading tables are compiled for one to two or three weeks, according to the baby's digestion. Caloric estimations are made to prevent "mere slipshod guessing when determining and grading ahead the progressive food allowance of the baby." The mixture may be graded to increase the total amount of food given or to increase the percentage of fat, protein or carbohydrate in the food. Grading is also important during the change from one kind of food to another.

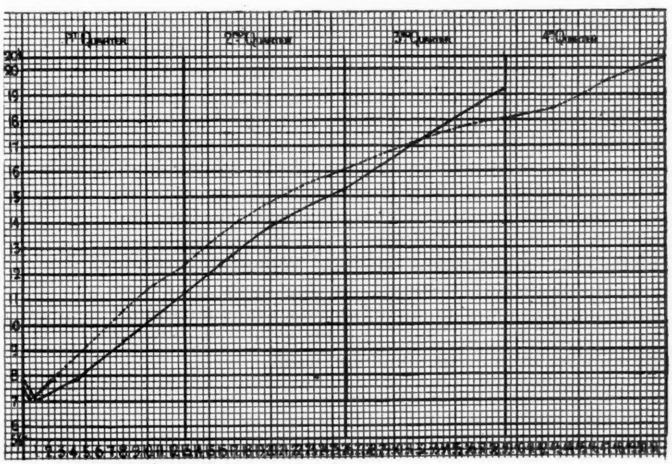
Table VI. is an example of grading to increase protein percentage by addition of milk and removal of some of the original mixture without alteration of the caloric value of the mixture.

Table VII. shows an example of grading from one food to another, grading from "Glaxo" to "humanized" milk Number 3 in six days.

The effect of humanized milk on the weight of babies in New Zealand is shown in Graphs XII. and XIII.

Dieting of Children from Nine Months to Two Years.

Speaking generally the Plunket method of dieting these children is more gradual than the usual American methods, whole milk being introduced very slowly during this period, though one pint of milk



GRAPH XIII.
Illustrating the Average Weight in 150 recorded cases (except at nine months which is the average weight in 143 cases) in the New Zealand Plunket centres. Diet = Humanized Milk Number 3 (Emulsion).
Dotted line = standard average weight.

may be given at one year of age. In America farina and vegetable soups are often introduced into the diet at six months of age; spinach and other vegetable *purées* and egg yolk are given early.

The Premature Baby.

In both countries, particularly detailed care is given to the premature baby. In many of the leading hospitals in America any baby becomes the charge of the pædiatrician as soon as it is born.

In the Californian University Hospital Dr. Palmer Lucas has made a special study of the premature baby and has obtained excellent results. Some points in his treatment are as follows: The baby is kept in a room of constant temperature between 21·1° C. and 26·6° C. (70° F. and 80° F.) with an hygrometer to regulate moisture in the atmosphere. Isolation is emphasized, each baby being separated from its neighbour by a wooden partition and the nurse wearing a special gown when attending each child. There is a double door at the entrance of the ward to prevent draughts and the baby is not removed until it is five pounds in weight, when it is gradually trained to bear a cooler temperature. Lactic acid milk is the usual food when breast milk is unobtainable.

In New Zealand Sir Truby King has also had excellent results with his detailed care of the premature baby. He believes in a lower room temperature, 15·5° C. to 20·1° C. (60° F. to 70° F.), plenty of fresh air and heating of the cradle according to the temperature of the baby. The diet is breast milk diluted if necessary with 2·5% sugar solution and if not obtainable, humanized milk Number 1 similarly diluted if need be, is used.

Conclusion.

I have attempted to give an outline of this subject which is too wide a one to admit of adequate treatment in the short time at my disposal. I have given slightly fuller details of the dietetic methods in New Zealand than of those in America, but even so they are far from exhaustive.

Good results are being obtained from welfare work in America, New Zealand and elsewhere, even though different methods of artificial feeding are being adopted. There has been wide divergence of opinion on the respective merits of these methods, but I wish to emphasize that the primary aim of this movement must be to inculcate knowledge of the more simple basic principles of mothercraft embodying detailed care regarding cleanliness, regularity of feeding and habits, fresh air and sunlight, general management of the child and natural feeding. Widespread teaching in mothercraft should be the essence of our infant welfare work. This fundamental fact should not be hidden by less important differences of opinion on minor aspects of the work.

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[2] Abt's "Pediatrics," Volume I., page 152.

[3] Report on Welfare of Women and Children, 1926, Department of Public Health, Victoria.

[3] H. Main and V. Scantlebury: Report on Welfare of Women and Children, 1926, Department of Public Health, Victoria, pages 4 and 5.

[4] M. H. Watt: "Infant Mortality in New Zealand," *New Zealand Journal of Health and Hospitals*, April 1, 1921, pages 89 and 90.

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A REVIEW OF THE DIABETES QUESTION.

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ORIGINALLY this paper was presented at the Bendigo meeting of the Victorian Branch of the British Medical Association under the title: "The Significance of Blood Sugar Estimations." The following paper is an elaboration of the original paper and many of the conclusions presented in it have been drawn from observations extending over the last three years in the treatment of patients suffering from diabetes at the Alfred Hospital, Melbourne.

Views are rapidly changing in our interpretation of glycosuria; we are constantly encountering aberrant states in connexion with sugar metabolism. Many of these conditions have an immense interest both from the scientific and from the economic social standpoint. The latter being the fact, it is important that medical men should at least be aware of the existence of these conditions.

For the elucidation of some of these new conditions it will be necessary to recapitulate certain facts concerning sugar metabolism, but for the sake of making this paper a complete and logical one, their inclusion will not seem an unnecessary one. In this paper it is proposed to present a concise *résumé* of our present knowledge concerning diabetes, to discuss the significance of glycosuria as met with in different medical and surgical conditions and to detail the principles underlying the dietetic treatment of diabetes.

The Normal Blood Sugar Variations.

In health the fasting blood sugar level lies between 0·08% and 0·11%. The blood sugar may be abnormally high (hyperglycæmia) or abnormally low (hypoglycæmia). The best method of studying the normal variations in the blood sugar content following carbohydrate is to give to the patient a definite amount of glucose in solution to drink and to examine the blood sugar content at definite intervals, plotting out the results in the form of a curve. Such a curve is known as a blood sugar tolerance curve. With the exception of lævulose all the assimilable forms of carbohydrate cause a rise in the blood sugar content following their ingestion. The fact that lævulose does not cause a rise in the blood sugar content has been made use of in the lævulose test for hepatic efficiency.[1]

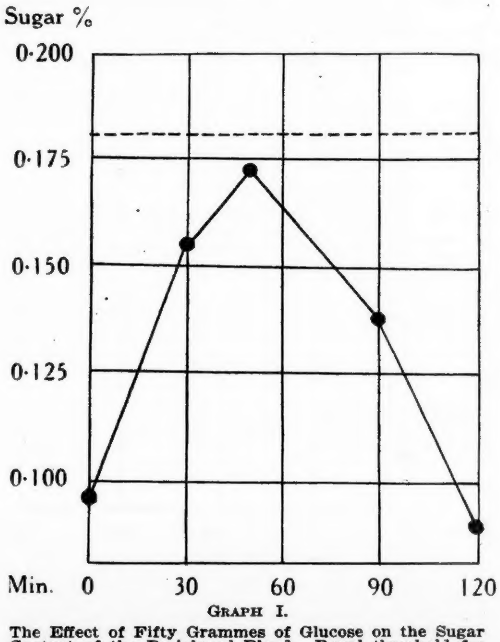
The Normal Blood Sugar Curve.

On a fasting stomach fifty grammes of glucose dissolved in one hundred cubic centimetres of water

are administered to the patient. Before the glucose is administered the fasting blood sugar is estimated and following the glucose, blood sugar estimations are made at intervals of thirty minutes for a period of two hours and the results plotted out in the form of a curve. The normal blood sugar curve is seen in Graph I.

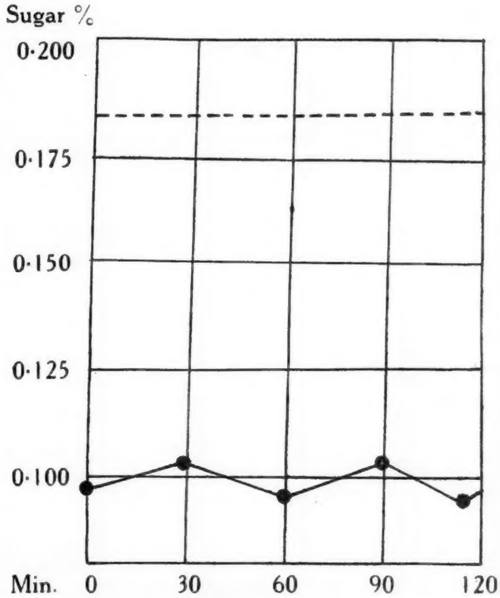
The following points should be noted. The blood sugar rapidly increases until a maximum point is attained, usually in about forty-five minutes. The actual height of this apex shows considerable variations, but usually lies between 0·15% and 0·18%. From this point a steady fall occurs and by the end of the second hour the blood sugar should have regained either its original level or a somewhat lower one. The renal threshold (that is the level at which the kidney will excrete glucose) lies in the vicinity of 0·18% and in the normal individual the ingestion of considerable amounts of glucose should not cause the blood sugar level to rise above the threshold figure.

The interpretation of the blood sugar curve is as follows. The rise in the curve is due to the increased absorption of carbohydrate *viâ* the portal vein from the stomach. The fall in the blood sugar curve is held to be due to the existence of a special storage mechanism by means of which sugar is rapidly removed from the peripheral circulation and stored in the liver as glycogen. In connexion with the sugar lævulose this mechanism is held to be particularly potent, so that following the lævulose ingestion no rise in the blood sugar content occurs. It would be logical to argue that in interference with hepatic function this mechanism would be upset. Hepatic efficiency tests are notoriously of little value owing to the fact that the liver possesses



GRAPH I.

The Effect of Fifty Grammes of Glucose on the Sugar Content of the Peripheral Blood. Renal threshold for glucose is indicated by the interrupted line.



GRAPH II.

The Effect of Fifty Grammes of Lævulose on the Sugar Content of the Peripheral Blood. Note that no appreciable rise in the sugar content occurs. Renal threshold for glucose is indicated by the interrupted line.

such a great functional reserve power. However, in certain acute conditions, for example early stages of catarrhal jaundice, metallic poisonings with arsenic, bismuth,[2] it would appear that considerable derangement of hepatic function occurs and in these cases the ingestion of lævulose is followed by a rise in the sugar content of the peripheral blood. The test has been tried in connexion with toxæmias of pregnancy, but has not proved satisfactory, some patients yielding normal readings and others a slight rise.[3] Recent observation at the Alfred Hospital tends to show that probably Schlesinger's test for urobilin will prove of considerable value in the diagnosis of early threatened eclampsia.

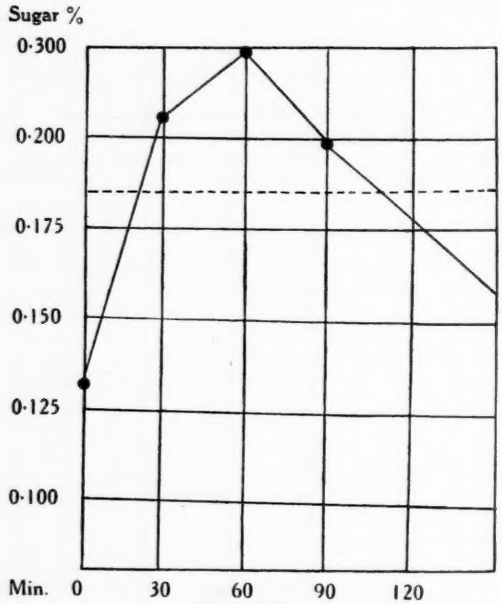
The Diabetic Blood Sugar Curve.

The curve in *diabetes mellitus* varies according to the severity of the patient's condition. In severe cases the fasting blood sugar is frequently above the threshold, figures of 0·2%, 0·3% and even 0·4% being not uncommon.

Graph III. shows the type of curve met with in a case of moderate severity. It is to be noted that the fasting sugar content is above the normal level; following the ingestion of glucose the sugar content rises to a value well over the renal threshold, with consequent glycosuria. Within two hours the blood sugar content has not returned to its normal level and it may be some hours before this occurs.

For the purposes of this paper it will be convenient to classify glycosuria under three heads:

(i.) Glycosuria occurring as a purely medical entity.
(ii.) Glycosuria occurring in pregnancy.
(iii.) Glycosuria occurring in association with surgical conditions.



GRAPH III.
Blood Sugar Curve in Diabetes of Moderate Severity. Renal threshold for glucose is indicated by the interrupted line.

Glycosuria as a Medical Condition.

Under the heading of glycosuria as a medical condition will also be discussed glycosuria in association with pregnancy.

Confronted with a case of glycosuria it is essential to investigate the condition in a logical and methodical fashion. If the sugar in the urine is glucose and the patient presents a typical diabetic syndrome, that is complains of wasting, polyuria and thirst, and there are acetone bodies in the urine, there is no need to plot a blood sugar curve. A single blood sugar estimation will usually clinch the diagnosis.

Such a typical case requires no special diagnostic acumen. The type of case that requires scientific handling, is one in which the sugar is accidentally found in the course of a routine examination, as for instance, the life insurance work. Here it may be necessary to determine in the first place that the urinary sugar is glucose. In members of the Jewish race the reducing sugar, pentose, occasionally occurs. As far as is known this body has no pathological significance. In the case of nursing mothers lactose may be found. That the need for discrimination of this sugar from glucose is a very real one may be shown by the following case.

CASE I.—Mrs. M.P. was admitted on July 6, 1926, with an acute abdominal condition. A specimen of urine contained 7% sugar, diacetic acid and acetone. Operation was performed and a ruptured ectopic pregnancy was discovered. The specimen of urine with the sugar was found not to contain glucose but lactose and the blood sugar was 0·114%. On questioning the patient it was found that she had nursed her baby for the last eighteen months. In view of the above findings it was thought that the condition was not diabetes. The acidosis was attributed to the vomiting associated with the acute abdominal condition.

Having eliminated the above two possibilities, a blood sugar curve should yield valuable information. The curve, while not being of the frank diabetic type as in Graph III., may show certain other features characteristic of mild or latent diabetes. Such features would be indicated by: (i.) A slight rise of blood sugar above the threshold value with consequent glycosuria; (ii.) a slight delay in returning to the fasting level. Such a patient should be regarded as potentially a diabetic and refused as an insurance "risk." A curve indicating the above features is seen in Graph IV.

Lag Curve.

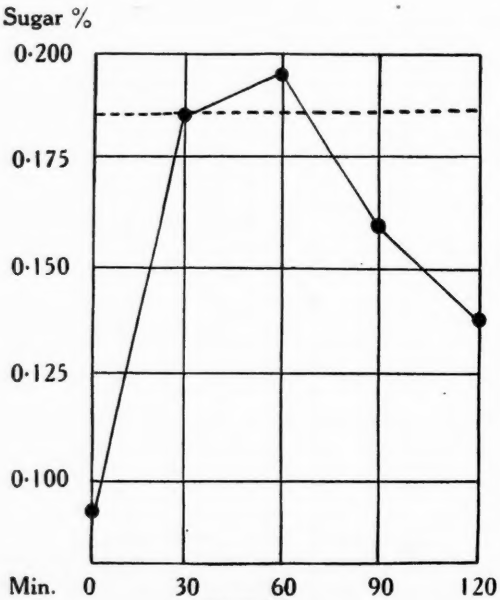
In a certain percentage of patients with glycosuria a peculiar curve known as a "lag" curve is encountered (see Graph V.). In this curve the blood sugar rises rapidly to a level well over the threshold (hence glycosuria), but rapidly returns to its normal level. As far as our present knowledge goes, the condition is benign.

Renal Glycosuria.

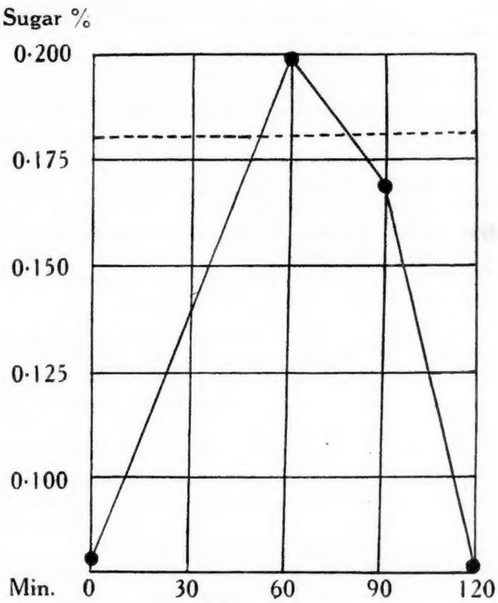
In renal glycosuria a perfectly normal curve is encountered, but it may be found that with a blood sugar value of 0·135% or thereabouts, sugar is passing into the urine. In other words, the renal threshold, instead of being in the vicinity of 0·175%, has been lowered to 0·135%. This condition also is of a benign nature.

Glycosuria in Pregnancy.

Undoubtedly true diabetes may occur as a complication of pregnancy, yet in the light of recent



GRAPH IV.
Blood Sugar Curve of Glycosuria Found in Routine Examination for Life Insurance. The fasting sugar was quite normal. However, a blood sugar curve clearly indicated the condition to be potentially diabetic. Renal threshold for glucose is indicated by the interrupted line.



GRAPH V.

Lag Curve. Renal threshold for glucose is indicated by the interrupted line.

observations it is equally certain that a pseudodiabetic condition may be encountered in pregnancy. Recently several patients have been observed in the later months of pregnancy. The condition of these patients when observed was essentially of a diabetic nature, with high blood sugar values together with acetone bodies in the urine. In order to control their glycosuria "Insulin" was necessary. However, the progress of these patients following confinement was so atypical that we could not help feeling that a true diabetic condition was absent. The following case may illustrate the above facts:

CASE II.—Mrs. O.G., *ætatis* thirty-seven years, was referred from the Ante-Natal Clinic on account of glycosuria. When seen she was four and a half months pregnant and presented a typical diabetic syndrome. She complained of loss of energy for the last two months, polyuria and thirst. Her urine contained glucose together with diacetic acid and acetone. Her blood sugar content was 0·262%. In order to control her glycosuria on a restricted diet it was necessary to administer "Insulin." The confinement occurred on September 29, 1926. On October 1, 1926, her fasting blood sugar content was 0·130% and the "Insulin" was reduced to five units daily. On October 5, 1926, the fasting blood sugar content was 0·090% and the patient complained of some slight hypoglycæmic symptoms. The "Insulin" was discontinued. Following the discontinuance of the "Insulin" the patient has been doing well, having no glycosuria and a normal blood sugar content and she is now on a practically normal diet.

Since we are not fully conversant with the exact nature of this condition, it would be a wise procedure to keep such a patient on a restricted diet for, say, a year and at the end of that time to plot a sugar tolerance curve in order to form a prognosis of her condition.

On looking through the statistics of the mortality, maternal and infantile, in association with diabetes complicating pregnancy, I am rather appalled at the high figures quoted. The lesson to be learnt from the treatment of the above patient is that these mortality figures should be greatly lessened. If a patient be seen having apparently a diabetic complication of pregnancy, the condition should be treated as if it were essentially diabetic and one should not hesitate to initiate "Insulin" therapy if ordinary dietetic measures fail to control the glycosuria. Following the confinement it may be possible to come back to a normal dietetic *régime*.

Further work is necessary before the exact physiological basis of this condition can be understood.

Glycosuria in Surgical Conditions.

It has become almost traditional to hand down from textbook to textbook the injunction always to test the urine for sugar of patients with boils and carbuncles. Admittedly a diabetic person may be prone to infections of the above nature, but it is now being recognized that many infective conditions are capable of causing glycosuria. The problem arises then as to whether the carbuncle is the cause of or is caused by the glycosuria. Apart from boils and carbuncles, glycosuria is frequently seen in many other infective surgical conditions. The actual condition present can be determined only by carefully following the patient after the infective focus has been radically dealt with. In order to give a careful prognosis in such a condition the most rational thing to do is to estimate the sugar tolerance after the patient has passed through the period of convalescence. The case quoted below will fully illustrate the foregoing remarks.

Miss I.H., *ætatis* twenty-three years, was admitted on September 17, 1926, suffering from an acute abdominal condition. The urine contained 2% of sugar, together with acetone bodies. The blood sugar content was 0·2%. Before operation twenty units of "Insulin" were given. At operation a gangrenous appendix together with a general peritonitis was discovered. Following the operation it was endeavoured to keep the blood sugar within normal limits and hence the urine sugar free by the administration of "Insulin." It was impossible in the early stages to place the patient on a definite diet owing to severe vomiting. Glucose together with egg flips and brandy were administered together with "Insulin." The convalescence, though stormy, eventually came to a favourable termination. The patient was able to take a fairly normal diet and the "Insulin" was gradually discontinued. Blood sugar estimations carried out on October 26, 1926, yielded the following information:

Fasting blood sugar content	0·086%
Half-hour after fifty grammes of glucose ..	0·142%
One hour after fifty grammes of glucose ..	0·167%
One and a half hours after fifty grammes of glucose	0·150%

A specimen of urine corresponding to the 0·167% level contained no sugar.

The Treatment of Diabetes.

It is not proposed to give a detailed account of the dietary treatment of diabetes, but rather to attempt to clarify and classify some of the innumerable textbook instructions. Much stress has been

laid on the estimation of basal maintenance diets and so on, all of which are fairly troublesome in their adjustment.

In the drawing up of a diet the following conditions are to be observed:

(i.) The diet must contain a suitable quantity of carbohydrate evaluated as pure glucose. (ii.) A sufficient protein content must be maintained. (iii.) The ratio of the fat to the total carbohydrate content of the diet must be such as to avoid the development of acidosis. (iv.) The diet must contain sufficient calories for energy purposes.

The Glucose Content of the Diet.

For some considerable time various graphical methods and formulæ have been in vogue for the determination of the carbohydrate content of a patient's diet. These charts are usually based on the sex, height, weight and age of the individual concerned. Frequently it happens that the carbohydrate value deduced by these methods is not a happy choice, being either too large or too small. This fact is understandable when we realize what great personal idiosyncrasies exist in the sugar tolerance of diabetic patients. It is illogical to expect a graphical method to evaluate accurately a patient's carbohydrate tolerance.

The matter is, however, capable of easy solution if a simple fact is appreciated. Most diabetic individuals have a carbohydrate tolerance in the vicinity of thirty to fifty grammes of carbohydrate *per diem* (by carbohydrate is not meant total glucose value of diet as estimated from protein and fat content in addition to pure glucose content).

The method that we adopt to adjust the carbohydrate content of a diet, is as follows. A diet is constructed to contain an amount of carbohydrate somewhere between thirty and fifty grammes *per diem*. With a little experience in judging the severity of the case it is possible to fix on a suitable figure for the carbohydrate content of the diet. It is always safer to err on the side of safety and to increase the carbohydrate later if the patient's tolerance will stand it. There are very few patients who can tolerate a carbohydrate of greater than fifty grammes of glucose. Indeed it is not economical to go beyond this and the tolerance of most diabetics will lie between thirty and fifty grammes of glucose *per diem*.

The Protein Content.

In our dietary schemes we have adopted a figure of about one gramme per kilogram body weight, the amount varying slightly in individual cases.

The Anti-Ketonic Ratio.

Apart from the pure glucose content (CH) of a diet, a certain amount of carbohydrate is derived from the protein and fat content. This amount, together with the carbohydrate content, constitutes the total glucose (G) value of a diet. To evaluate G proceed as follows:

$$G = CH + \tfrac{3}{5} \text{ protein} + \tfrac{1}{10} \text{ fat.}$$

To avoid a tendency to acidosis the fat content of the diet should not be in excess of the available carbohydrate and, provided the following is satisfied, all should be well.

$$G : \text{fat} :: 1 : 1{\cdot}6.$$

The calorific content of the diet may be estimated by allowing twenty-five to thirty calories per kilogram body weight. As Maclean points out a certain number of diabetics are of the obese type and are over weight and he suggests that their calorific content should be estimated on the basis of the weight of an average person of the same sex, age and height as the patient.

The above remarks pertaining to diet construction may be briefly summarized as follows:

1. Provide a sufficient calorific content, allowing twenty-five to thirty calories per kilogram body weight (one kilogram = 2·2 pounds). For practical purposes it will be found that most diabetics will require from 1,800 to 2,300 calories.
2. Provide a sufficient protein content.
3. Fix on an optimum carbohydrate figure, remembering that thirty to fifty grammes represents the average range.
4. Observe the anti-ketonic ratio.

It is possible to save an enormous amount of trouble by constructing a diet for a hypothetical case. With a little experience this diet can be adjusted to meet the case in point. Such a diet may be constructed as follows:

DIET NO. I.

	Carbohydrate.	Protein.	Fat.
Breakfast—			
Tea with one ounce of Milk ..	1·5	1	1
1 Egg	—	6	6
1 ounce Bacon	—	5	15
1 ounce Butter	—	—	25
1 "Uneeda" Biscuit	5	0·5	—
4 ounces 5% Vegetables	4	0·2	—
	10·5	14·5	47
Lunch—			
Tea with one ounce of Milk ..	1·5	1	1
2 ounces lean Meat	—	16	10
4 ounces 5% Vegetables	4	2	—
2 "Uneeda" Biscuits	10	1	1
1 ounce Butter	—	—	25
½ ounce Cheese	—	4	5·5
	15·5	24	42·5
Tea—			
Tea with one ounce of Milk ..	1·5	1	1
2 ounces lean Meat	—	16	10
3 ounces 5% Vegetables	3	1·5	—
2 "Uneeda" Biscuits	10	1	1
1 ounce Butter	—	—	25
½ ounce Cheese	—	4	5·5
	14·5	22·5	42·5

Carbohydrate = 40·5 grammes, protein = 61 grammes, fat = 132 grammes.

$$\begin{aligned} \text{Calories} = 40{\cdot}5 \times 4 &= 162 \\ 61 \times 4 &= 244 \\ 132 \times 9 &= 1{,}188 \\ &\overline{1{,}594} \end{aligned}$$

$$G = 40{\cdot}5 + (\tfrac{3}{5} \times 61) + (\tfrac{1}{10} \times 132) = 89{\cdot}5.$$

$$G : F :: 1 : 1{\cdot}4.$$

It will be observed that this diet has a fairly low calorific content, 1,594, but as the $G : F$ ratio is low, we can readily add more fat and bring up the calorific content to, say, 1,819 calories. This fat addition can be managed by placing an extra half of an ounce of butter on to the breakfast and evening meals.

This diet would then be suitable for an individual requiring a calorific content of, say, 1,800 and a protein value of 61 grammes. A point to remember is that energy is built up chiefly from fat and in order to provide a large fat content we must increase the carbohydrate content so as to avoid acidosis. In other words the calorific content is largely regulated by the carbohydrate content, for the greater this is, the larger is the amount of fat that can be added to the diet. Conversely, if we decide that a certain number of calories are essential and find that the patient cannot tolerate sufficient carbohydrate to enable the fat to be built up to give the required calories, it is clear that "Insulin" is indicated to enable sufficient carbohydrate to be used.

A modification of the diet to suit another type of case is given below. By comparing this diet with the previous one the method of alteration can be readily seen.

DIET NO. II.

Suitable for an individual requiring 2,000 calories and a protein content of sixty-five grammes approximately.

	Carbohydrate.	Protein.	Fat.
Breakfast—			
Tea with one ounce of Milk	1·5	1	1
2 "Uneeda" Biscuits	10	1	1
4 ounces 5% Vegetables	4	2	—
1½ ounces Bacon	—	7	22
1½ ounces Butter	—	—	37·5
1 Egg	—	6	6
	15·5	17	67·5
Lunch—			
Tea with one ounce of Milk	1·5	1	1
2 "Uneeda" Biscuits	10	1	1
4 ounces 5% Vegetables	4	2	—
1½ ounces Butter	—	—	37·5
2 ounces lean Meat	—	16	10
½ ounce Cheese	—	4	5
	15·5	24	54·5

Tea—as for lunch.

Carbohydrate = 46·5 grammes, protein = 65 grammes, fat = 176·5 grammes. Calories = 2,034. G : fat :: 1 : 1·6.

A little study of the diets given above will reveal the method of increasing either the carbohydrate or fat content. The carbohydrate may be increased by the addition of 5% vegetables or "Uneeda" biscuits. The fat content may be increased by the addition of butter or bacon. In the foods mentioned above a somewhat monotonous type is prevalent. However, the above foods have the advantage of being readily procurable and the practitioner may easily substitute other foods of equal food values, such as bread, porridge and so forth.

Application of the Dietary Scheme.

A brief outline of the application of the above scheme may be helpful. For a case in point, let me consider a young adult admitted with fairly acute diabetes. The blood sugar content is found to be raised and the urine to contain considerable amounts of sugar and acetone bodies.

By calculation it is found that, say, about 1,850 calories are required, together with a protein value of about 65. These figures indicate that a diet of the type No. 1 is required. We know that for the equilibration of this diet a pure glucose content of about forty grammes is necessary.

For a patient with much acidosis it is always a wise plan at first to keep the fat content low and then when the acidosis clears up, to increase this constituent. Hence, in the case considered, the patient would be placed on a diet similar to Diet No. 1. He would be kept on it for about seven to ten days. Several events may now take place. The glycosuria and acidosis may clear up. In this case the fat content may be gradually increased to give the requisite number of calories. The physician, if he so desires, may increase the glucose content and *pari passu* the fat, but except when a specially strenuous occupation demands more than the theoretically estimated number of calories, this increase is not advisable.

Within two or three days it may be perfectly obvious that the patient is not going to respond to the purely dietetic *régime* and "Insulin" must be considered. In initiating "Insulin" treatment the principle to be adopted is briefly as follows. A diet must be chosen and the "Insulin" adjusted to suit the diet. In the above case, if it is decided to employ "Insulin" therapy, the question of dosage arises. Here again the practitioner's clinical experience is his best guide. To be absolutely safe he can start with five units in the morning and five in the evening. A point to be observed is that he should not hurry unduly to get the patient sugar free. When it is clear that the "Insulin" is materially affecting the glycosuria, it is best to proceed by steady increments, passing from large amounts of sugar to a trace and finally to "sugar free." Obviously, if the initial dosage makes no appreciable reduction of the glycosuria, larger dosages would be indicated. A suitable increment scheme is as follows:

Five and five units, ten and five units, ten and ten units, fifteen and ten units, fifteen and fifteen units, twenty and fifteen units, twenty and twenty units.

In practice thirty units in the morning and thirty units in the evening are seldom exceeded. With the handling of a few patients it is possible to select a suitable commencing dose and perhaps eliminating the smaller preliminary ones.

In other cases immediate cessation of the glycosuria may not occur, but its lessening leads the physician to expect freedom. This frequently happens and so before deciding on "Insulin" for such a patient, it is wise to wait for from ten to

fourteen days in the endeavour to elicit a definite response to the dietetic *régime*.

Coma.

It is not proposed to go into the matter of coma in detail. Already much has been written on the subject and only a few main points will be summarized.

In treating coma it is essential to administer large dosages of "Insulin" before the circulation fails. In a severe case eighty to one hundred units of "Insulin" form a suitable dose. At this stage it is not only unnecessary but waste of valuable time to administer glucose in addition.

When considering the next dose it must be admitted that blood sugar estimations afford a great sense of security for the patient's exact condition can be appreciated. Thus, if within an hour and a half no appreciable difference occurs, another eighty units may be given, or if some change occurs, fifty units and so on. It is advisable to make estimations of the blood sugar every hour. The "Insulin" must be "pushed hard." There will never be a sudden transition from hyperglycæmia to hypoglycæmia. If the patient has improved considerably and the blood sugar is well lowered, it may be advisable to give small amounts of glucose, but this must not be done with the early "Insulin" doses.

If blood sugar estimations are not available, reliance may be placed on urinary sugar estimations at hourly intervals, even if it be necessary to tie in a catheter. Following the initial dosage, if at the end of an hour and a half the urinary sugar is not reduced, another fifty to eighty units may be given; by examining specimens at hourly intervals twenty to thirty units may then be given (according to the degree of glycosuria), until a definite improvement is elicited. As soon as possible the patient should be given a suitable diet and the "Insulin" doses should be adjusted to suit the diet.

References.

(1) K. H. Tallerman: "The Lævulose Test for Liver Efficiency and an Investigation of the Hepatic Condition in Pregnancy," *Quarterly Journal of Medicine*, 1923-1924, Volume XVII., page 37.

(2) H. C. Semon: "An Antidote for Arsenic, Bismuth and Mercury Poisoning," *The British Medical Journal*, 1924, Volume I., page 662.

(3) H. M. Halliday and C. E. Sutherland: "Arsenical Poisoning Treated by Sodium Thiosulphate," *The British Medical Journal*, February 28, 1925, page 407.

LOW TRANSVERSE ARREST OF THE FŒTAL HEAD IN OCCIPITO-POSTERIOR POSITIONS.

By CECIL COGHLAN, M.B., Ch.M. (Sydney), F.R.C.S. (England), M.R.C.P. (Ireland), D.G.O. (Dublin),
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A.S.L., aged twenty-one years, married eighteen months, was admitted to the Women's Hospital, Sydney, at 11 p.m. on October 7, 1926. She had been in labour since 8 p.m. the previous day, with very strong pains since 7 o'clock on the morning of admission.

Her medical attendant who arranged for her admission, stated that the fœtus was in an occipito-posterior position, that he had failed to advance the head after prolonged forceps application and had also failed at manual rotation. He considered that craniotomy was indicated.

On admission the patient's condition was moderately good. She had generalized œdema and her urine contained much albumin. Her last menstrual period had started on December 26, 1925; for obstetrical purposes she could be considered a *primipara*, although she gave a history of two early miscarriages. She was normal in structure and in pelvic measurements.

On abdominal examination a retraction ring could be felt, but the lie of the fœtus not definitely ascertained. The fœtal heart rate was 150 per minute.

On internal examination it was noted that the vulva and vagina were œdematous, the cervix had been fully taken up, the fœtal head was at the level of the ischial spines and the sagittal suture was in the transverse diameter of the pelvis. There was a large *caput succidaneum* which rendered the identification of the fontanelles difficult, which difficulty was increased by overlapping. On displacing the head a little, so that the ear could be felt, the cord prolapsed with the rush of *liquor amnii*. Pulsation in the cord was feeble. It was replaced by a method that I think has not yet been published; for simplicity and efficiency it excels all other methods. I acquired it at the Rotunda Hospital, Dublin. A length of sterile gauze is taken and is wrapped several times loosely around the prolapsed cord, both ends being left two to three inches long. These ends are grapsed with ovum or uterine dressing forceps which are passed gently towards the fundus of the uterus. When they have passed a sufficient distance, the grip of the forceps is loosened and the forceps are withdrawn, the cord being left wrapped in the gauze high in the uterus. The gauze comes out with the cord when the placenta is expressed. On feeling the fœtal ear, it was ascertained that the occiput was towards the left.

Kielland's forceps were applied with the blades in the occipito-mental diameter, the handles when applied pointing to the patient's left side. The fœtal head was slightly displaced upwards and then flexed, the handles of the forceps being brought into the middle line. When traction was made, rotation was almost dramatic in its rapidity and delivery followed soon afterwards. There was a slight tear of the perineum needing one suture.

The child was still-born and weighed three and a quarter kilograms (seven and a quarter pounds). There were extensive forceps abrasions over the right eye, the nose and forehead and the back of the neck. The vagina also had abrasions on both lateral walls. These were the result of previous application of the "classical" type of forceps with the blades more or less on the lateral pelvic wall.

After delivery the patient was given a prophylactic dose of antistreptococcal serum; her puerperium was uneventful, except for incontinence of urine and fæces which, however, had ceased before her discharge from hospital on October 29, 1926. Her urine contained no albumin on the sixth day.

My reason for publishing this case is to draw attention to a termination of an occipito-posterior position, which is not altogether infrequent and which is rarely mentioned in the textbooks on obstetrics. I find it mentioned in FitzGibbon's "Practical Midwifery";[1] "When the occiput moves in a forward direction after the shoulders have engaged in the brim, the head is likely to remain in the transverse diameter of the pelvis and advance to cease unless the fœtus is small, when it may be born in that position . . . ." and in Williams's "Obstetrics":[2] "In many instances internal rotation does not take place until the perineum begins to bulge, but occasionally it occurs only partially . . . so that the occiput rotates only to a transverse . . . position, when spontaneous labour

is out of the question unless the child is very small." Neither author gives any indication of the treatment, except to indicate that natural delivery is impossible. Neither gives any reason for the arrest of the head in this position.

What is the cause of low transverse arrest of an occipito-posterior position?

In every case I have seen the measurements of the maternal pelvis have been normal or large, while the fœtus has been of normal size. The condition has usually occurred in *multiparæ;* in fact of six definite cases this one has been the first in a *primipara*.

My theory as to the cause agrees with the findings. The fundamental cause is insufficient flexion of the head when engaging, so that the occiput and the sinciput are more or less at the same level, the occiput leading slightly. Any of the causes of slight extension or insufficient flexion of the head are thus predisposing factors. When the head reaches the pelvic floor, advance is delayed and the occiput tends to rotate to the front (being the first part to strike the pelvic floor). At the same time, owing to the resistance to the advance of the occiput, extension is increased with each pain with the consequence that the sinciput reaches the pelvic floor at the same level as the occiput and rotation ceases, equal forces now acting at opposite ends of the long axis of the head. With continued uterine action the head becomes jammed tight into the narrowing transverse diameter of the pelvis and uterine retraction occurring, it cannot be displaced except perhaps under deep anæsthesia.

Treatment.

If Kielland's forceps are available and the practitioner is familiar with their application,[3] the easiest way to bring about safe delivery is as I have described in the case above. With the ordinary pelvic curve forceps, the blades may be applied biparietally to the fœtal head in the occipito-mental diameter with the outside of the pelvic curve towards the occiput. When flexion and partial rotation to the front have been obtained, the forceps must be removed and reapplied in the usual manner with the inside of the pelvic curve towards the occiput. It is sometimes possible, if the condition is recognized early, to displace, flex and rotate the head manually under deep anæsthesia.

References.

[1] Gibbon FitzGibbon: "Practical Midwifery," 1923, page 275.

[2] J. Whitridge Williams: "Obstetrics," Fifth Edition, 1923, page 300.

[3] C. Coghlan: "Forceps," THE MEDICAL JOURNAL OF AUSTRALIA, July 31, 1926, page 144.

Reviews.

THE AUSTRALIAN ENCYCLOPÆDIA.

THE second volume of "The Illustrated Australian Encyclopædia" is now to hand.[1] This volume, from M to Z, completes the great work that the publishers, Messrs. Angus and Robertson, undertook. In the preface to the first volume we are told that "this Encyclopædia was first projected in 1912 as an historical and biographical record . . . when the outbreak of the war in 1914 temporarily halted its progress. In 1917 work was resumed and it was decided to include articles on scientific subjects also." After fourteen years of strenuous endeavour and patient waiting—a period as long as that during which Jacob waited for Rachel and Leah—the dream of the publishers has come true. How long they dreamed before they began to act, we know not; but this we do know that the completed work must be the source of great satisfaction to them. The cost of publishing this Encyclopædia has been great and this fact demonstrates clearly that the virtue known as public spirit, is still a living thing. In our review of the first volume we commented favourably on work done by the contributors and the up-to-dateness of the information given. The quality of the articles in the second volume is quite up to the standard set by the first volume if it is not superior to it. We should like here to congratulate the editors, Messrs. A. W. Jose and H. J. Carter, on the excellence of their work. Their work was heavy and their responsibility great, but they met and overcame in a most creditable manner the difficulties that beset their editorial path. The subjects treated in "The Illustrated Australian Encyclopædia" are so diversified—there are more than two thousand essays in the two volumes—that no matter in what direction his tastes may be, the inquirer will find some article or articles which will specially appeal to him.

The subject of biography occupies a considerable portion of both volumes and the medical profession will be interested to know that in the second volume alone there are no fewer than nineteen biographical sketches of doctors. How many members of the profession are aware of the fact that that intrepid young explorer William John Wills, the companion of Robert O'Hara Burke on the expedition which left Melbourne on August 20, 1860, and which ended so tragically, was at one time a medical student at Guy's and St. Bartholomew's Hospitals?

Most people are interested in and at one period of their lives have collected stamps. The majority, however, after a longer or shorter period of ardent collecting grow weary in well doing and fall away from grace; but a few—the faithful—never lose their first love. To the faithful, the, backslider and the general reader the article on philately may be studied with pleasure and profit. It will be news to many to learn that Mr. James Raymond, an early Postmaster-General of New South Wales, was the first in the British Empire to introduce or rather put to practical use the equivalent of the postage stamp. Mr. Raymond's plan was to sell to the public at one penny each, sheets of paper impressed with the seal of the General Post Office. A letter written on one of these sheets could be folded and sealed and would then be passed through the post office for distribution within the town of Sydney, free of any further charge. Governor Gipps minuted the paper containing Mr. Raymond's suggestions: "Let the experiment be tried but tne price must be fixed at 1½d. the single cover or 1s. 3d. per dozen." The public were informed of the adoption of the stamped cover by Gazette notice dated November 1, 1838. This was nearly two years before Great Britain issued the first adhesive stamp and stamped envelopes. The story of the evolution of the postage stamp is fascinating.

Where is the political historian or the student of political history who will not welcome and revel in the article containing the information relating to the Federal and State Governments. The article on "Ministries: Federal, Colonial and State Since the Establishment of Responsible Government" contains in a tabulated form the names of all those who have ever held ministerial office. This article runs to twenty-two pages and shows evidence of much research, but it also shows how transient is fame.

It is not often realized that the history of railways is a short one. There are many people in New South Wales who can remember when Australia was without railways. "A company formed in September, 1848, and incorporated by act of Parliament on

[1] "The Illustrated Australian Encyclopædia," Edited by Arthur Wilberforce Jose and Herbert James Carter; Volume II., M to Z; 1926. Sydney: Angue & Robertson, Limited. Demy 4to., pp. 749.

October 10, 1849, proposed to begin with a line from Sydney to Parramatta; the first sod for the line was turned on July 3, 1850, by the daughter of Sir Charles Fitzroy, then Governor. The railway was opened between Sydney and Parramatta Junction (afterwards Granville), a length of thirteen miles, twenty-eight chains, on September 26, 1855." Only seventy-one years ago. The history of the railways and tramways of all the States is told in the article on railways and tramways. In the first volume of the Encyclopædia State education is well put. In the second volume we learn all about the secondary schools which "have by right of a definite constitution attained the position entitling them to rank as 'public schools'." The question has often been raised as to which of the great public schools can claim priority of foundation. In 1832 two King's schools were opened, one in Sydney and one in Parramatta. The Sydney school soon ceased to exist, but the King's School, Parramatta, still flourishes and is generally recognized as the oldest grammar school in this State. But there are some who believe that the Sydney Grammar School can claim greater antiquity. It has been stated that although it is true that in 1854 an act incorporating a new Sydney grammar school was passed, the genesis of the school dates back to the year 1825 when during the administration of Governor Brisbane a free grammar school was opened with the Reverend Dr. Halloran as headmaster. After passing through many vicissitudes—during one period the school buildings were occupied by the young university—the Free Grammar School finally became the Sydney Grammar School. The article on "Schools" runs to nearly five pages and is replete with information historical and interesting. One of the remarkable pieces of research in the whole Encyclopædia is the article on "Wrecks and Shipping Disasters," by Captain Bayldon. This catalogue occupies no fewer than fifty pages of closely printed matter. The article is divided into five sections and contains details of marine disasters from 1622 down to the present year. Section V. tells what is known of the "last years or final destruction of some well-known passenger sailing ships between Great Britain and Australia which were not wrecked while engaged in that trade." To those who have any knowledge of or liking for the "Clipper Ship Era" and the era of the packet and frigate built ships, this record will be a joy. We have critically examined Captain Bayldon's work, but never in one instance have we caught him nodding. To examine the other articles in the Encyclopædia would be superfluous. They are all good and written by men, experts in their own subjects. The book is profusely illustrated and many good coloured plates are added. Every public library will contain "The Illustrated Australian Encyclopædia" and no private library should be without a copy. The work is Australian, it is comprehensive, it is as accurate as it is possible to make such a work and it is up to date.

CAVERNOUS SINUS THROMBOSIS.

UNDER the title "Cavernous Sinus Thrombophlebitis and Allied Septic and Traumatic Lesions of the Basal Venous Sinuses" Dr. W. P. Eagleton has produced a volume which will interest those engaged in many branches of medicine.[1] The book consists chiefly of records of cases, but these are so separated by the author's remarks that the reading is anything but difficult. Nearly all cases referred to are supplemented by full *post mortem* notes from which careful deductions have been drawn. The route of infection is more variable than the surgical textbooks would lead the student to believe and Dr. Eagleton also shows that chronic cases occur in which there is little or no orbital swelling. In a condition which is so often fatal, yet in which spontaneous recoveries do occur, it is not easy to assess the value of methods of treatment until they have undergone repeated trial. Dr. Eagleton is convinced that an essential part of the treatment consists in diminishing the pulsations of the internal carotid artery in the cavernous sinus by ligature in the neck. He produces evidence to show why he considers ligature of the internal carotid artery a less dangerous procedure than others hold it to be. Treatment of cavernous sinus thrombosis on these lines aided by serotherapy have certainly given results worthy of an extended trial. Those wishing for a readable book which will provide much food for thought, cannot do better than add this excellent monograph to their collection.

[1] "Cavernous Sinus Thrombophlebitis and Allied Septic and Traumatic Lesions of the Basal Venous Sinuses," by Wells P. Eagleton, M.D.; 1926. New York: The Macmillan Company. Post 8vo., pp. 211.

A MONOGRAPH ON THE PANCREATIC HORMONE.

THE isolation of "Insulin" by Banting and his colleagues at Toronto in 1921, stimulated an enormous and widespread interest in carbohydrate metabolism. A comprehensive review and coordination of the results up to the present is given by J. J. R. Macleod in "Carbohydrate Metabolism and Insulin." This book is the latest member of monographs on physiology and is very worthy of its place in this wonderful series.[1]

The writer has been a pioneer in research on carbohydrate metabolism for over a quarter of a century and it is only the enormous amount of experimental data that has been collected by him and his staff, that has made the writing of the book possible.

The book is divided into twenty-one chapters and deals with every aspect of insulin. At the end of each chapter is an extensive bibliography. The author is very just in giving credit to workers in other parts of the world and it is interesting to read: "With Zueler, E. L. Scott and Rennie and Fraser, Murlin and his collaborators came nearest to demonstrating that insulin can be extracted from the pancreas; had too much regard not been taken of what were thought to be possible sources of error, it is possible that the pancreatic hormone might have been available for treatment of diabetes ten years before this was actually the case." A typical chapter is that on hyperglycæmia; it deals with all aspects of this condition from the hypoglycæmia produced by extirpation of the liver to that produced by insulin injection and covers work done on animals as divergent as frogs and man. The last chapter is devoted to the essay of "Insulin" and throws an interesting light on the work of the Standardization Committee of the Health Section of the League of Nations.

The book is not suitable for medical men unless they are specially interested in metabolism; some training in biochemistry is required. The subject matter treats with work from many laboratories and the results of similar experiments are generally contradictory, often diametrically opposite. Though the author attempts to formulate conclusions from the material at hand, the reader finishes almost every chapter perplexed in mind. In spite of an enormous amount of the most painstaking research, we still know nothing of how insulin acts, we do not even know how it causes the sugar to disappear from the blood; we think of Omar:

> "Myself when young did eagerly frequent
> Doctor and Saint and heard great argument
> About it and about: but evermore
> Came out by that same door where in I went."

However, for those who wish to be *au fait* with the present position of our knowledge of insulin, the book is indispensable. Workers in Toronto deserve great praise for the persistency with which they have led the world in research on carbohydrate metabolism. To their isolation and standardization of "Insulin" is added this exhaustive review; we hope that their industry will be rewarded by even greater achievements in the future.

[1] "Carbohydrate Metabolism and Insulin," by John James Rickard Macleod, F.R.S., M.B., LL.D. (Abdn.), D.Sc. (Hon.) (Toronto); 1926. London: Longmans, Green and Company, Limited. Royal 8vo., pp. 369, with illustrations. Price: 18s. net.

The Medical Journal of Australia

SATURDAY, JANUARY 8, 1927.

A Retrospect.

Medicine.

THE year 1926 has not been characterized by any great discovery in clinical medicine. At the same time steady advance has been made. This has been most noticeable in the treatment of certain diseases and in the prevention of others. Investigations into the ætiology of many conditions have, moreover, not been fruitless.

Tuberculosis has continued to be a field for many investigators. The most important work of the year in connexion with this disease and that which offers most hope for the future, comes from Calmette and Guérin at the Pasteur Institute in Paris. These workers have prepared a vaccine from successive cultures of what was originally a virulent bacillus of bovine tuberculosis. It is claimed that when this vaccine is injected into infants, immunity is conferred. Poix has reported results of the injection of this vaccine and claims a considerable reduction in the mortality from tuberculosis among children on whom it has been used, in comparison with those who were not inoculated. Hone reports that cultures have been obtained from Calmette for use in Australia. The claims made by Smalpage have not survived investigation and his treatment has been shown to be worthless. Schilling and Hackenthal have continued their work on passive hypersensibility in tuberculosis. They have found that hypersensibility to the tubercle bacillus can be produced in normal guinea pigs and they have succeeded in producing passive hypersensibility in guinea pigs with the serum of tuberculous patients in a small percentage of cases. The diagnostic significance of this work has not yet been determined. Hone has emphasized the responsibility of the State in connexion with the prevention of tuberculosis and Wunderly has drawn attention to the necessity for the recognition of the various types of tuberculosis before specific or other treatment is undertaken.

Much study has been devoted to the pancreas and the pancreatic hormone. Knowledge of the uses and limitations of "Insulin" has become more stabilized; it has become more plain that the use of this potent substance must be correlated carefully with dietetic treatment. The glucose in a given diet has the power of oxidizing twice its molecular weight of fats and both foods are now administered in their due proportions. Large amounts of fat may be given, provided the patient burn up about one-third of its weight in sugar. At the same time the patient should get no more food than is required for his actual metabolic needs.

The causative organism of measles has not yet been definitely determined, but Tunnicliff has continued her researches in this direction. She has used the Gram-positive, green-producing diplococcus described by her for the production of a serum from goats and has found that this serum is as effective as serum from convalescent persons in preventing measles. She has also described a skin reaction produced by this diplococcus in persons who have not had measles. She regards both these observations as further evidence of the ætiological significance of the organism in question. Kochmann has reported failure to prevent complications by the use of the prophylactic measles serum of Degkwitz.

Regan and Tolstouhov have undertaken the chemical analysis of the blood of patients suffering from pertussis. They find very constantly a diminution of the total inorganic phosphorus content and a lowering of the hydrogen ion concentration of the blood. These blood changes are characteristic of an uncompensated acidosis due to increased concentration of carbon dioxide in the blood. They hold that sodium bicarbonate, calcium carbonate and magnesium oxide will abort the disease if administered early. Mayrhofer has reported success in the treatment of pertussis with vaccines prepared from *Bacillus pertussis*, *Micrococcus catarrhalis* and *Bacillus influenzæ*. In Denmark, on the other hand, success has been obtained with a vaccine prepared from the Bordet-Gengou bacillus.

As a result of the work of G. F. and G. H. Dick scarlet fever has been the subject of much investigation. Kelsey has carried out observations in Melbourne on the Dick test. She concluded that this test is of more value in separating susceptible from non-susceptible children than for the purposes of diagnosis. She also found that the antitoxin has a definitely beneficial action on the disease.

Evidence accumulates that hæmolytic organisms present in the biliary tract bear an important relationship to the causation of pernicious anæmia and the connexion between the disease and gastric achlorhydria is firmly established. Cowen has drawn attention to the close resemblance which may exist between the clinical picture of pernicious anæmia and that of sprue. Reed and Wykoff have advanced the view that pernicious anæmia, sprue and the combined degeneration of the spinal cord are due to toxin originating in the gastro-intestinal tract, not a single toxin, but a related group, possibly produced by a variety of causes. They regard it as likely that in the case of sprue there may be some additional factor which is potent in districts where sprue is wont to occur. It is interesting to note that Hamilton Fairley and Mackie have failed to confirm the findings of Martinez and Michael who reported a complement fixation in the serum of patients suffering from sprue when *Monilia ashfordi* (*Monilia psilosis*) was used. They regard the Ashford strain as a secondary factor in the production of certain intestinal features of sprue, but never as the primary cause. They look upon sprue as being due to some infective agency primarily involving the mucosa of the alimentary tract.

Of interest to clinical pathologists are important observations on the appearances of the various types of nucleated red cell and also new methods for the more accurate estimation of blood volume indices. The use of citrated blood in treatment is not regarded favourably by some workers. It has been stated that such transfusions render the blood cells abnormally fragile and this method of treatment can hardly be said to enjoy its former popularity.

Dew has continued his work on hydatid disease. He finds that daughter cysts in a typical hydatid cyst have an endogenous origin only. They usually arise by progressive evolution of the cells of the original germinal membrane or from brood capsules. More rarely they develope from scolices. Exogenous daughter cyst production from intracuticular nuclear masses, as usually described, does not occur. Dew has also made observations on hydatid disease in the domestic herbivora and its relationship to *Echinococcus alveolaris*.

Molesworth has discussed the important question of segregation in leprosy. He has shown that cases of leprosy occur in which it is extremely difficult to detect the bacillus of Hansen and he has drawn attention to the findings of Taylor that leprosy infection may be of such a nature that diagnosis would certainly be missed unless the medical attendant were looking for it. He has made out a good case for the conversion of the lazaret into a voluntary refuge for the leper.

Mitchell has put forward a new treatment for chilblains by means of pressure applied over affected areas.

It is of interest to note that the value of Noguchi's prophylactic vaccine against yellow fever has been triumphantly vindicated in a Brazilian epidemic.

Surgery.

It is becoming increasingly evident that the art and practice of surgery is necessarily dependent on a sound knowledge of anatomical structure, physiological function and pathological change. This has been made clear in many of the recent contributions to surgical literature.

The surgery of malignant disease must again be given pride of place in the record of recent work. A great deal has been talked of cooperation between surgeon and radiologist in the treatment of malignant disease, but a perusal of recent literature does not reveal that this actually takes place. Devine has made an important contribution on the early diagnosis of cancer of the stomach. He has described the several clinical types of gastric carcinoma, discussed the significance of various symptoms and has shown how the aids to diagnosis may be used with advantage. Devine can find no support on clinical grounds for the view that carcinoma arises on an old ulcer. This is at variance with the

teaching of the Mayo school. Lawrence and Bock have examined this question and have concluded that gastric ulcer preceded gastric carcinoma in not more than 10% of their series of patients. As has been pointed out, however, in this journal the data given by them are not sufficient to prove their contention. Crile has discussed the relative values of surgical operation and radiation therapy in the treatment of cancer. He has based his opinions on results obtained in a large series of cases. He finds that the most suitable type of treatment varies with the region of the body affected.

Lockhart-Mummery has described satisfactory results from the operation bearing his name, which is applicable to malignant growths of the rectum situated below the recto-sigmoidal junction. Dukes has found that malignant disease of the large intestine may arise in a benign adenoma, but he has been unable to find signs of inflammation in connexion with the appearance of benign adenomata. Lecène and Lacassagne have reported a case in which a malignant tumour arose in the hand of a medical student as the result of accidental inoculation.

Rutherford Darling has discussed the subject of chronic appendicitis and its association with right-sided enteroptosis. He has emphasized the necessity for exploration of the abdomen in all operations undertaken after a diagnosis of chronic appendicitis has been made. Hertzler has expressed the opinion that there is no such thing as chronic appendicitis, that a terminal fibrosis is not a chronic inflammation.

Maclure has communicated the result of his work on chronic ulcer of the leg and has put forward a method which will revolutionize the treatment of this painful condition. Chronicity of ulcers is due to failure of the lymphatic and venous circulation. Healing is obtained when the circulation is restored. When recumbency is not possible, the obstruction to the onward flow in the vessels is overcome by the application of a pump-like force to the superficial tissues. The arterial pressure and the contraction of the muscles of the leg are used for this purpose. The treatment of chilblains referred to in another chapter is the application of this principle.

An important series of investigations has been carried out on the wallaby by Monson on the subject of abdominal incisions. He found that a minimum amount of damage was caused when the rectus sheath was opened and the muscle retracted medially. The grid-iron incision was accompanied by a considerable amount of degeneration. These findings are somewhat at variance with those arrived at by Peet from a clinical point of view. Koontz has investigated the question of muscle and fascia suture, especially in regard to the repair of herniæ. His results show that fascia will unite strongly with fascia. It was found that when, as frequently happened, such a muscle as the internal oblique united with the inguinal ligament in a firm state, the union was between the fascia of the ligament and the connective tissue of the epimysium. Horsley has found that it is frequently impossible to produce permanent occlusion of a large artery. New blood vessels may arise, penetrate the thrombi and restore the lumen. In large vessels it is better to apply three ligatures and divide the vessel between the two distal ligatures.

Hipsley has shown that in his hands the use of hydrostatic pressure is a highly efficient treatment for intussusception. Although he has described his technique in considerable detail, doubt has been expressed as to the advisability of recommending this treatment both to those whose experience is relatively small and to those whose hospital equipment is not of a very high order. Vickers has communicated the results of the treatment of intussusception at the Royal Alexandra Hospital for Children. When patients are seen at an early stage and when the diagnosis is carefully considered, the mortality can be kept at a relatively low figure.

The treatment of cerebral tumours has been the subject of much discussion. At the Congress of the International Society of Surgery in April Sargent presented some remarkable figures of good recoveries occurring after removal of brain tumours. He referred to the statement that ventriculography is required because only 30% of tumours are localizable by neurological means. With this he entirely disagrees. The percentage in his opinion is in the neighbourhood of 90%. For this reason he

does not expect much of ventriculography. While the tendency to rely too much on such drastic methods of investigation is to be deprecated, it is probably correct to say that the ventriculogram will find its definite sphere of usefulness. Noble and Monson found it of considerable assistance in the case recently reported by them.

Royle's operation of ramisection continues to yield satisfactory results in his hands and in those of a number of other surgeons. Some of these cases have been reported from time to time in the pages of this journal. The remarkable improvement in a patient suffering from Hirschsprung's disease and subjected to ramisection by Wade is most striking. This subject is inseparable from the purely physiological one of the innervation of striped muscle. Reference will be made to this in a subsequent chapter. Davis and Kanavel have reported success after ramisection in the treatment of Raynaud's disease. Hesse is not satisfied with the results of cervical sympathectomy in cases of severe asthma. The percentage of cures is put down by him at only thirty. There is in his opinion at present no definite sign as to when the operation is indicated.

Pannet in reviewing the old argument as to whether the treatment of duodenal ulcer should be medical or surgical, admits that medical treatment should be given an extensive trial, before surgical measures are undertaken. At the same time he emphasizes the high percentage of good surgical results. Finney's operation of pyloroplasty has been elaborated and advocated by the younger Finney and theoretically has much to recommend it.

Gynæcology.

The physiology of the female pelvic organs has received attention by Wolfe who has investigated the condition of severe menstrual bleeding at puberty in the absence of inflammatory changes. He considers that there is often a glandular hyperplasia of the endometrium which is easily controlled by radium.

Whitehouse has discussed the influence of the *corpus luteum* on menstruation. In his opinion the *corpus luteum* is intimately associated with menstruation in that the development and life of the menstrual decidua are dependent on a hormone elaborated by the *corpus luteum*. Excision or degeneration of the *corpus luteum* results in necrosis of the endometrium and menstruation follows. Ovulation is not influenced by the *corpus luteum*, but is an expression of rhythmic ovarian activity. When the unfertilized ovum perishes, the *corpus luteum* degenerates and this causes the shedding of the endometrium. Whitehouse holds that menstruation is the monthly abortion of the developing decidua of an unfertilized ovum and the menstrual discharge is the "lochia" of this abortion. This is a new concept in the physiology of the œstrous cycle.

Knowledge of the Graafian follicle and of the interstitial cells of the ovary has been extended by the work of Wilfred Shaw.

There have been many contributions to pathogenesis in the field of gynæcology. Seitz has classified cases of menorrhagia into three groups, the increase of the regular flow, profuse hæmorrhage with shortened intervals and irregular hæmorrhages. He has given an analysis of causes and treatment. So-called essential uterine hæmorrhage has been discussed by Archner; he urges conservatism in operation for women affected by this condition. Blair Bell and Monson have contributed papers on ovarian transplanting or grafting. Endometriomata have been investigated by several writers. Sampson has dealt at length with the transfer of endometrium by escaping menstrual blood. Whitehouse reported cases of endometriomata of the broad ligament and bladder. Ray and Donaldson have reported one of endometrioma in the uterine tubes, while Thomson has had experience of malignant endometrioma with metastases in the lung.

Several contributions have been made to the technical aspect of operations. Blair Bell has described in detail the Bell-Beuttner operation for conservation of the ovaries in pelvic inflammation. Leith Murray has published his results in a series of operations for myomectomy. The Mayo operation for cystocele has also been described in detail.

Neurology and Psychiatry.

In the literature of 1926 bearing on the clinical side of neurology and psychiatry there will be found

much work of a consolidating nature. In regard to the organic diseases of the central nervous system mention must be made of the paper by Barnes and Hurst on hepatico-lenticular degeneration. These observers hold that the nervous symptoms of this disease do not arise before the liver is grossly damaged. The conclusion is thus forced that this hepatic disease is an essential physical foundation, a disease primary both in time and importance and one whose cause must be determined by research.

As a result of his research in amyotrophic lateral sclerosis Marinesco has made the novel suggestion that the initial changes in the motor nerve cells are provided by the activity of intracellular ferments affecting certain colloid media revealed by the ultramicroscope. Although the essential pathogenic agent for these processes remains obscure, the idea is interesting and, coming from one so experienced as Marinesco, is entitled to respect.

As an aid to the clinical diagnosis of disseminated sclerosis Cottrell and Kinnier Wilson draw attention to the constant presence of psychical symptoms consisting of change of disposition, emotional uncontrol and a sense of *bien être*. Other clinicians will probably agree that these symptoms are primary or direct results of the disease process and of clinical importance.

For many years, indeed since the late F. E. Batten first described the rotated posture of the head in disease of the cerebellum, it has been assumed that this attitude is intrinsically due to cerebellar affection, but Russell Brain now conclusively shows that it is the outcome of a tonic reflex induced by labarinthine impulses and that lesion of either labyrinth or eighth nerve is the fundamental factor.

In addition useful papers have appeared on *encephalitis lethargica,* migraine, epilepsy and meningitis. These have strengthened knowledge without materially altering conceptions of these conditions. Mention should be made of the report by Hamilton Marshall and Inglis on *encephalitis lethargica,* published in this journal and of the conclusions formed by Lind from his *post mortem* findings in epilepsy. Prior and Edwards have also drawn attention to the usefulness of lumbar puncture in epilepsy and allied convulsive disorders. Turner and Critchley and Jeliffe have drawn attention to the frequency of respiratory disorders in *encephalitis lethargica.* Lewkowitz has expressed the view that cerebro-spinal meningitis, being primarily a ventriculitis, can be effectively treated by intraventricular attack only.

French writers, in particular André-Thomas, have devoted much study to the exploration of the sympathetic nervous system by clinical tests. Moreover the relief by operation on the sympathetic nervous system for sundry vasomotor and non-striped muscular disorders, previously found intractable, continues to be demonstrated. Reference has been made in the chapter on surgery to the results from sympathetic ramisection. These provide evidence of the utility of the operation which in our opinion is unassailable and wholly subversive of adverse criticism.

In the realm of psychiatry work of practical value has been carried out. Knowledge of *dementia præcox* has been put on a sounder basis. The treatment of general paralytics by inoculation with malaria continues to be successful. Ellery has made a report of some work of this nature carried out in Australia. Bostock has studied the gastric secretion in mental disease. He finds that achlorhydria and hypochlorhydria are surprisingly common in the psychoses; he infers that they are expressions of general psycho-physical change. Robertson has dealt with mental hygiene and has pointed to the need for collaboration between medical practitioners within and outside mental hospitals and he has pleaded for the dissemination of appropriate knowledge among the public. Finally it may be said that the utiliity of clinics and wards in general hospitals for patients suffering from mental disease has been established. Evan Jones has given evidence of this as far as the voluntary patients at Broughton Hall Clinic are concerned. Moreover, in some countries special schools (not classes in ordinary schools) and even colonies for the training and care of those handicapped by mental deficiency have been instituted with advantage.

Abstracts from Current Medical Literature.

GYNÆCOLOGY AND OBSTETRICS.

The Interstitial Cells of the Human Ovary.

WILFRED SHAW (*Journal of Obstetrics and Gynæcology of the British Empire*, Summer Number, 1926) reports further investigations into the histology and physiology of the ovary, with special reference to the interstitial cells. He concludes that the interstitial cells are found constantly in human ovaries from late intrauterine life to the time of the menopause. They are invariably derived from *theca interna* cells of the follicle. They are produced during pregnancy. Their function is obscure. Probably they influence the hypertrophy of the breasts, the female characters of the pelvis and the development of the uterus. It is probable that some influence is exerted by the cells of the degenerating *corpus luteum*.

Endometriosis and Inguinal Hernia.

JOHN A. SAMPSON (*American Journal of Obstetrics and Gynecology*, October, 1926), who first described endometrial tumours or so-called "chocolate" cysts in the ovary, has described a case in which endometriomata were found in the sac of a right inguinal hernia, the pelvic cavity and on the ovary. He concludes that the clinical and pathological study of pelvic peritoneal endometriosis convinces him that it is usually due to the escape of menstrual blood into the peritoneal cavity with the subsequent local reaction. Menstrual blood at times passes into the peritoneal cavity as a back flow from the uterus through the tubes, from the tubal mucosa itself, from the perforation of an endometrial hæmatoma of the ovary and possibly from endometrial tissue on peritoneal surfaces. Menstrual blood, like other irritants, causes granulation and scar tissue, adhesions and peritoneal inclusions. In addition endometrial tissue is often found on the surface of or imbedded in these peritoneal lesions and must arise either from the implantation of fragments of uterine mucosa which are often present in menstrual blood, or else in some way the peritoneum is converted into endometrial tissue by the specific stimulation of some ingredient of this blood. Clinical observations indicate that endometrial tissue may be successfully transplanted in human beings. These lesions occur most frequently in the dependent portions of the pelvis and in its normal peritoneal pockets and folds. It is natural to assume that they might occur in a hernia sac just as tuberculosis and carcinoma have been found in the hernia sacs of patients with peritoneal tuberculosis or carcinoma. The author reports a case of pelvic peritoneal endometriosis associated with an endometrial cyst of the ovary and an inguinal hernia. Peritoneal lesions containing endometrial tissue were present in both the anterior and posterior *cul-de-sac* and also in the walls of the hernia sac including its neck. Observations made at the operation and the laboratory study of the specimens removed indicate that the pelvic peritoneal lesions and those of the hernia sac had a common origin from some material escaping into these cavities and from the local reaction to the same. The author believes that this material was menstrual blood. The endometrial cyst of the ovary is evidence that a perforation may have occurred and the patent tubes are two avenues by which menstrual blood may have reached the peritoneal cavity and the hernia sac.

The Corpus Luteum and Menstruation.

BECKWITH WHITEHOUSE (*Journal of Obstetrics and Gynæcology of the British Empire*, Autumn Number, 1926) has reported observations made during laparotomy on the *corpus luteum*. He puts forward the following conclusions, based on his own work and that of Shaw, Marshall and Dixon. Excision or degeneration of the *corpus luteum* results in necrosis of the endometrium. Ovulation is not influenced by the *corpus luteum*, but is an index of rhythmic ovarian activity. The *liquor folliculi* in the human species has no specific function in the sex cycle. Menstruation is the monthly abortion of the developing decidua of an unfertilized ovum and the menstrual discharge is the "lochia" of this abortion. The premenstrual endometrium is the menstrual decidua and is merely a stage in the development of the complete decidua of pregnancy. The premenstrual dilatation of uterine glands is an artefact produced by the retention of secretion owing to constriction of the ducts by the stroma and, later, by extravasated blood. The development and life of the menstrual decidua are dependent upon a hormone elaborated by the *corpus luteum*. Degeneration of the *corpus luteum* is normally the result of a "negative phase" produced by death of the ovum with its *corona radiata* and absorption of its products. The cells of the *corona radiata* are morphologically identical with the larger cells of the *corpus luteum*. The life of the unfertilized human ovum after rupture of the follicle is approximately fourteen days. The rhythmic cycle of events in the human female may be represented as follows. Rupture of the follicle occurs on the thirteenth day. Development of the *corpus luteum* is complete by the nineteenth day. Development of the endometrium into menstrual decidua with differentiation into "*stratum compactum*" and "*stratum spongiosum*" has occurred by the twentieth to the twenty-seventh day. Death of the unfertilized ovum and production of a "negative phase" by the dead cells of the *corona radiata* occur at about the twenty-seventh day. Commencing degeneration of the *corpus luteum* followed by necrosis of the menstrual decidua occurs from the twenty-seventh to the twenty-eighth day. Continued necrosis of decidua and removal of the products of abortion by uterine contraction stimulated by pituitary activity take place from the first to the fourth day. Regeneration of the endometrium complete functional activity from the fifth to the twelfth day.

Post Partum Pulmonary Embolism.

A. HOCHENBLICHLER (*Wiener Medizinische Wochenschrift*, September 18, 1926) reports a case of *post partum* pulmonary embolism which is remarkable for the length of time—four weeks—elapsing before the embolism occurred. The patient was a *primipara* who had a difficult labour with forceps following division of the cervix and episiotomy. There was a slight rise of temperature during the puerperium and she was kept in bed for four weeks until involution of the uterus was complete and the pelvis was clear. The patient insisted on going home despite the presence of a slight rise in temperature and died from a pulmonary embolus while in the car. The author considers it to be a moot point whether embolism would not have occurred if the patient had remained in bed. The need for systematic exercises in bed to prevent the occurrence of embolism is emphasized.

Treatment of Abortion.

H. STERNBERG (*Deutsche Medizinische Wochenschrift*, September 10, 1926) summarizes his experiences in 2,617 cases of abortion. Nearly half of the patients were febrile and the majority of the abortions were without doubt criminally induced. The cases were almost equally divided between single and married women. The average age for single women was twenty-one as compared with thirty for the married. In incomplete septic cases attempts to empty the uterus were made by the use of quinine, ergot or pituitary extract. Only in 6% were these drugs completely successful. Active treatment was adopted because of severe hæmorrhage in twenty-four cases and sixteen patients died from sepsis. In all eighty-eight deaths occurred among 1,164 septic abortions. Fifty-four patients were moribund on admission, sixteen died after curettage for hæmorrhage and eighteen succumbed following conservative methods of treatment. Provided that the infection has not spread beyond the uterus, curettage is advocated for all patients with fever. The average duration in hospital of these patients was seven to eight days. There were 1,453 patients without fever and medicinal methods for emptying the uterus were successful in 14%. No deaths occurred. The author prefers dilatation sufficient to introduce a curette to the risk of laceration of the cervix consequent on the wider dilatation required for manual exploration of the uterine

cavity. If the patient's condition does not call for immediate interference, the use of laminaria tents is preferable to rapid dilatation. Two cases of perforation of the uterus by the curette were noted.

NEUROLOGY.

Disseminated Sclerosis.

SAMUEL SMITH COTTRELL AND S. A. KINNIER WILSON (*Journal of Neurology and Psychopathology*, July, 1926) submitted to a complete neurological and psychological investigation one hundred patients of both sexes in consecutive cases of disseminated sclerosis, of great variability as regards duration, degree and clinical form. They found that the majority showed changes in (i.) prevailing emotional disposition, (ii.) emotional expression and control, (iii.) sense of physical well-being. These affective symptoms were characteristic of the disease, were primary or direct results of the disease processes and were completely independent of duration, degree or clinical form. They were far more frequent than any single neurological symptom and constituted a diagnostic triad of greater value than any neurological symptom-complex. In a moderate number of instances they preceded any somatic neurological symptoms, subjective or objective. The common feeling of emotional or affective well-being might be designated *euphoria sclerotica* and that of physical well-being *eutonia sclerotica*. The undue optimism shown by most might be called *spes sclerotica*. In comparison with these affective symptoms intellectual disorders were minimal and negligible. The writers associated the invasion of the affective sphere with the known fact of pathology that the disease almost constantly has a periventricular, subependymal spread and the relative integrity of the intellectual faculties with the relative conservation of the cortex. Evidence was adduced which suggests that the affective symptoms are the outcome of invasion of the palæothalamus by the morbid process. The affective symptoms may arise before structural disease of the neuraxis is clinically apparent and can be set down to dynamic alteration of function of toxic origin. By analogy, it might be that certain psychoses and psychoneuroses characterized by changes in the affective field have a toxic or toxi-structural and not a psychopathological basis.

Right Hemisphere of the Brain in Relation to the Left.

S. E. HENSCHEN (*Brain*, March, 1926) is one of those who has remained faithful to Broca's doctrine of aphasia and elsewhere has written that in cases of destruction of the left third frontal convolution without aphasia the explanation is that the right frontal convolution acts as a substitute. But if both the left and the right third frontal gyri are destroyed, speech disappears completely and for ever. There is a great variability in the restoration of speech after destruction of the left third frontal gyrus. In any case the right hemisphere manifests a great inferiority and plays only an automatic rôle; it is responsible for the mechanical repetition of words and for paraphasia. As to agraphia, it is not proved that the right hemisphere can act for the left, writing being a higher faculty than motor speech. Nor in word-deafness is there evidence that the right first temporal gyrus is able to act as a substitute for the left or completely subserve word-hearing. It is interesting, however, that in such a case echo-speech may be preserved. Also in word-blindness the right angular gyrus can only in very limited measure take over the functions of the left. Concerning the musical faculty, however, which is phylogenetically as well as ontogenetically older than speech, its representation would appear to be more uniformly distributed in both temporal poles. Significant of this is the fact that in many cases of motor aphasia the faculty of singing words is conserved in spite of the complete inability to speak a single word. In the case of the faculty for calculation, analysis of the available cases shows that the visual factor is important and the left hemisphere mainly concerned. Lastly as to the cause of dexterity, many theories have been propounded of which the most tenable is that the greater use and consequently the greater development in volume and strength of the right hand has made it more serviceable than the left.

Rotated or Cerebellar Posture of the Head.

W. RUSSELL BRAIN (*Brain*, March, 1926) says that the rotated posture of the head, first described by Batten in 1903, is the result of interference with a tonic reflex in which the extensor muscles of the neck, under the influence of impulses from the labyrinths, are maintained in a state of tonus adequate to resist the effect of gravity on the head. Experimental destruction of one labyrinth or section of the eighth nerve on one side leads to rotation of the head to the affected side. Lesions within the *pons*, mid-brain or fore-brain may lead to rotation of the head either to the affected or to the normal side according to their situation. Lesions confined to the cerebellum do not lead to the rotated posture of the head; accordingly it is unfortunate that this has received the name of the "cerebellar" attitude. Clinically it has been found that a unilateral *otitis media* or an acoustic nerve tumour leads to rotation of the head to the affected side. This is attributed to interference with impulses from the labyrinth on the affected side. Lesions of the *pons* and mid-brain have been found in five personally observed cases to lead to rotation of the head to the normal side. Tumours of the cerebellum may lead to rotation of the head either to the affected or to the normal side. It is suggested that the former effect is due to pressure on the homolateral eighth nerve and the latter which occurs in more advanced cases, to compression of the *pons* and *medulla* on the affected side.

Action Tremor.

H. DE JONG (*Journal of Nervous and Mental Diseases*, July, 1926) indicates that three kinds of tremor, rest, action and intention have been described. These he analyses. He concludes that rest and action tremor, well seen in *paralysis agitans*, are both of striatal origin and differ not in quality but in quantity alone. Accordingly the term rest tremor seems to be redundant. Action tremor, however, differs from intention tremor as follows: it may be static as well as locomotory, it is induced by emotion or physical activity, it is regular, it affects circumscribed groups of muscles and its frequency is five to seven per second. Intention tremor, on the other hand, is locomotory only, it arrives at the end of a movement, it is irregular, the whole limb moves and its frequency is two per second. Further as concerns action tremor, a normal man under the influence of physical strain or emotion may show tremor which under ordinary circumstances an inhibitory mechanism holds in check. Substitute a pathological condition, however, such as a striatal lesion and this inhibitory mechanism becomes weakened and action tremor is released. Action tremor may be aptly called an extrapyramidal clonus.

Progress in Psychiatry.

R. H. COLE (*The Lancet*, July 24, 1926) in an address delivered before the Section of Psychiatry of the Royal Society of Medicine, London, said that the pathology and treatment of the insane made steady strides, while the problems presented by the relationship of law and public opinion to disordered conduct seemed to remain remarkably constant and required adjustment by successive generations. With all that has been learned of the cortex both in health and disease, it is impossible yet to speak of mind in terms of cerebral function. Referring to what he called "the almost startling growth of fresh psychological views," he said that he regarded the writings of Janet as a landmark in the progress of psychiatry and he applauded the work on industrial psychology initiated by Myers and welcomed the spread of education among the public concerning mental hygiene. In the treatment of the insane he referred to the recognized influence of the malarial parasite on general paralytics, to improved accommodation in asylums which were more like hospitals, to better diet, occupational therapy and other advances. The teaching of psychiatry in medical schools had made decided progress and the opening of clinics marked a fresh era. Unfortunately law and medicine were still unable to see eye to eye on the criminal responsibility of the insane, likewise the public attitude towards insanity generally was still full of prejudice.

Medical Societies.

THE MELBOURNE PÆDIATRIC SOCIETY.

A MEETING OF THE MELBOURNE PÆDIATRIC SOCIETY was held at the Children's Hospital, Melbourne, on July 14, 1926, DR. A. P. DERHAM, the President, in the chair.

Infant Welfare.

DR. VERA SCANTLEBURY read a paper, entitled "Experiences Abroad: With Special Reference to Infant Welfare" see page 35).

DR. H. DOUGLAS STEPHENS congratulated Dr. Scantlebury on her excellent paper and said that he was very pleased to note that she did not continually stress the importance of breast feeding to this meeting of pædiatricians. Their own instinct told them this. What the meeting was interested in concerned the methods of feeding other than the breast.

The greatest difficulty in artificial feeding was generally experienced in the first six months of life. During a long experience at the Foundling Hospital Dr. Stephens had found that the babies during the first three months of life did not gain on artificial feeding at the same rate as breast-fed babies.

The fact that two opposing schools, high protein feeding and low protein feeding, both obtained good results clearly demonstrated that there could be no standardized method applicable to all infants as was possible with animals such as calves.

With babies so many factors could influence the growth and nutrition from the time of birth, for example, maternal malnutrition, congenital syphilis, an hereditary predisposition to tuberculous infection, various influences acting during the period of gestation and also accidents might occur during a difficult confinement.

He had found high protein feedings as advocated by Marriott and others give results equally as good as those obtained with the complicated formulæ of Sir Truby King, adapted from Rotch's system. Dr. Stephens found that many infants thrived very satisfactorily on whole milk acidulated according to the method of Marriott or on gradually increasing strengths of a simple milk and water dilution. He had yet to see definite evidence that high protein feeding affected the infant's kidneys. Simplification in infant feeding was essential. He considered it impracticable to hand complicated formulæ to the mothers and expect them to prepare the feedings according to such directions. This method of feeding required the constant supervision of a nurse carefully trained in such methods. With such assistance it was an ideal to be aimed at and one which had been carried out extremely well in New Zealand.

DR. STEWART FERGUSON also congratulated Dr. Scantlebury on her interesting paper. He stated that he did not agree with the idea of humanization of cow's milk. In his opinion no modification of cow's milk could in any way make it resemble human milk. Of the constituents only the carbohydrate portion was the same in character, but the proteins and the fats were quite different. The lactalbumin of the human milk provided most of the amino-acids necessary for growth, whereas the protein of cow's milk was chiefly casein and considerably more had to be used to supply the necessary amount of those particular amino-acids. Further, the curd of cow's milk was tough and this was necessary in order to accustom the calf to tough herbaceous foods. The fats were also totally different in character. The only rational way to modify cow's milk for infants was to render it more easily digestible.

Finally, lactose was found to be the least tolerated carbohydrate in cow's milk mixture, dextrimaltose was much better and a mixture of several different carbohydrates best of all.

Dr. Ferguson considered that "humanization" was an ideal which it was impossible to obtain in practice. The less cow's milk resembled human milk, the better results were obtained with the addition of dextrimaltose and starches and in his opinion with the necessary higher proteid percentage and also in the majority of cases a lower fat percentage.

DR. CHARLES PERRY added his congratulations to Dr. Scantlebury on her very instructive paper. He held the Truby King system in very high esteem and considered that if a modification of cow's milk were obtained with a composition as near as possible to that of human milk, it must be the right feeding for an infant that could not be breast fed.

Dr. Perry considered the chief object to be aimed at was educational work during the antenatal period. This greatly increased the proportion of babies that were breast fed.

Difficult cases could be managed only by long experience and experiment and he did not think it fair to compare babies with young stock, as each infant provided a special problem in itself.

DR. F. KINGSLEY NORRIS stated that Sir Truby King had drawn attention to the big problem in infant welfare, namely: "Why do not mothers breast feed their children?" and the answer was that it was due to lack of education of both the mother and the nurse.

Dr. Norris considered that much of the trouble was due to lack of cooperation between the obstetrician and the pædiatrician. If artificial feeding had to be resorted to, he asked was it not being made too complicated? Each child had a different digestive ability and he considered that too little was left to the child's own instincts. A properly balanced feeding given at reasonable intervals was all that should be necessary. In fact, the variety of methods in infant feeding, all claiming an equal degree of success, was sufficient indication of how healthy infants could adapt themselves to different types of feeding.

DR. GERALD WEIGALL asked Dr. Scantlebury what arrangements were made for the other children and for the domestic duties in the home when a mother went to one of the mothercraft institutions for a period of three or four weeks for instructional purposes.

He considered that the importance of breast feeding should be impressed on the nursing staffs of the private hospitals and that this would greatly improve the nursing of the young infant.

Students and junior residents should also be thoroughly taught the same principles and should be made to realize the danger of sudden change in a diet for babies.

DR. ALAN B. MCCUTCHEON agreed with the two previous speakers that much of the trouble was due to lack of appreciation on the part of the maternity hospitals of the importance of maintaining breast feeding. He quoted a case he had seen recently in which the breast milk had been lost and all the damage done before the mother had arrived home from the maternity hospital, all due to the fact that the baby had been given an extra bottle at various times in order "to pacify the child."

DR. W. SPAULDING LAURIE considered that it would be a distinct advantage to have a closer supervision of the health centres by a qualified medical practitioner.

He was also interested in the weight of Australian infants and quoted some figures of Brailsford Robertson, of Adelaide, showing that the weight of the new-born infant in South Australia was greater than that of the English infant and that the advantage was maintained throughout infancy. As a rule records were not available after the first year and he doubted whether such advantage was continued through early childhood.

In his experience artificially fed infants had often gained at a greater rate than breast fed babies and he had found that they tolerated high protein and fat contents very well.

DR. NORMAN GOOD did not approve of the method of placing the child at one breast for fifteen minutes and the other for five minutes at each feeding and then reversing at the next feed. He considered that the one breast should be emptied completely before the other was stimulated.

He was often at a loss to understand why nursing mothers in comfortable circumstances who had had close antenatal supervision, often did not nurse their infants as well as mothers of the poorer classes. The only explanation he could offer was that these mothers were perhaps more highly strung and suffered a greater nervous strain which affected the supply of breast milk. With

reference to blaming maternity nurses for taking infants off the breast, he thought the general practitioner was sometimes rather more to blame, as he was always a little jealous of popularity in the hospital and might occasionally be tempted to allow an extra feeding to "quieten the baby" rather than consider the ultimate welfare of the infant.

He agreed that the ideal to be aimed at was a thorough teaching for maternity nurses of the paramount importance of breast feeding.

Dr. Robert Southby said that he was very interested in the remarks of Dr. Scantlebury and later of Dr. Laurie with reference to the weights of Australian babies. He also had frequently gained the impression that they were in excess of the usual standards given in most of the textbooks. In confirmation of this Dr. Southby had analysed the weights of two thousand infants and young children and compared these figures with those of a number of recognized pædiatricians. The results were shown in a table and plotted graphically and presented to the meeting for the interest of members. They indicated that the advantage in weight which the Australian new-born infant had over babies in other countries was even more than maintained throughout early childhood (see The Medical Journal of Australia, October 9, 1926, page 483).

Dr. A. P. Derham expressed the appreciation of the members of the Society and thanked Dr. Scantlebury for the excellent and helpful presenetation of such a comprehensive subject as infant welfare. He was very gratified that she had dealt with mothercraft and child welfare in general and not restricted the paper to infant feeding alone.

Dr. Scantlebury in reply thanked the Society for the manner in which they had received and discussed her paper.

She was very pleased to hear the remarks of several speakers on maternity hospitals and their influence on breast feeding and quoted an extract from the recent report to the Victorian Government which showed that in a series of thirty-five infants born in private hospitals no less than ten were being artificially fed after a period of ten days from birth. She considered that one of the difficulties was that most of these hospitals had too small a staff to attend properly to the baby and its breast feeding.

In answer to Dr. Weigall's question, Dr. Scantlebury said that most of the women attending the mothercraft homes in New Zealand were of the upper and middle classes and they could usually make ample provision for managing the home during their absence. Rest homes were provided for the other children in the families when it was necessary to have them cared for. Dr. Scantlebury said that she was at present endeavouring to arrive at a standard of weight and height for Australian children compiled from figures obtained at the health centres and schools throughout the State.

The danger of sudden changes in an infant's diet was emphasized in the process of grading of humanized milk.

With regard to the medical supervision of health centres, Dr. Scantlebury agreed that this should be stricter, but at the present time there was only one medical officer for all the centres in the State. In New South Wales there were a number of honorary medical officers for this work, but in America all such work was done by salaried officials.

In conclusion, Dr. Scantlebury said that she had always regarded infant welfare as comprising a much wider field than infant feeding alone. It was concerned with the general health of both the mother and the child and required the closest coordination of both therapeutic and preventive measures.

British Medical Association News.

MEDICO-POLITICAL.

At a meeting of the Council of the South Australian Branch of the British Medical Association held on December 2, 1926, the following matters were considered and action taken.

Friendly Society Lodge Practice.

A letter was read from the Secretary of the Friendly Societies' Association, dated November 22, 1926, in reply to a letter sent at the direction of the Council on November 8, 1926, in connexion with the conditions under which medical examination for the purpose of the increased lodge benefits would be carried out by medical officers of lodges. From this letter it was concluded that a considerable time would elapse before an understanding would be reached. It was resolved that members should be advised that pending the conclusion of the negotiations, they had the right to refuse to examine friendly society lodge members for this purpose. The Council recommended that a fee of seven shillings and sixpence should be charged, to be collected from the examinee at the time of the examination.

In regard to the adoption of a new model lodge agreement it was resolved:

> That six months' notice of termination of the agreement with the Friendly Societies' Medical Association, Incorporated, which expires on September 30, 1927, be given.
>
> That the members of the present Lodge and Ethical Subcommittee be asked to continue as a special subcommittee to carry the matter to completion, provided that the same has not been finalized before their term of office expires.
>
> That the Federal Committee be advised that unless a uniform model lodge agreement is decided upon at the next meeting of the Federal Committee, circumstances will force the South Australian Branch to act independently.
>
> That the proposed alterations to the present Model Lodge Agreement, which were considered at the last meeting of the Federal Committee and adopted as the basis for further consideration by all Branches, should be circularized confidentially to all members of the Branch.

It was decided that this action should not be taken until the whole matter had received further consideration by the Lodge and Ethical Subcommittee. It was further agreed that in the amended agreement a clause should be inserted to provide that a properly audited statement of receipts should be furnished to the Branch each year and that a duly authorized representative of the South Australian Branch should have access to the balance sheets of the friendly societies.

Contract Practice.

The Council after considering the question of various systems of contract practice resolved that it approved of only two forms of practice, namely private practice and lodge practice. It could not countenance the so-called contract system of practice.

Fees for Commonwealth Public Service Examination.

The recommendation of the Lodge and Ethical Subcommittee that the fees prescribed by the Commonwealth Public Service Board of Commissioners, namely ten shillings and sixpence for examinations at the medical practitioner's consulting rooms and twenty-one shillings at the officer's residence, if within two miles, be approved, was adopted.

In The Medical Journal of Australia of November 13, 1926, page 671, a letter addressed by the Council of the Queensland Branch of the British Medical Association to the members of the Branch on the division of the State into areas or groups for the purpose of the better organization of the work of the Branch, was published, together with a map indicating the proposed areas. Reference to this was made in the annual report of the Council (see The Medical Journal of Australia, December 25, 1926, page 872). The following representatives have been appointed to act in the districts named:

Dr. Egmont Schmidt in the Bundaberg district.

Dr. P. S. Clarke in the Cairns district.

Dr. A. H. Baldwin in the Townsville District.

Examinations.			First Term.				
			Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
First Professional: 1. Biology. 2. Physics. 3. Chemistry.	First Year. Biological Sciences.		**1** Elementary Biology, Physics and Chemistry.				
Second Professional: 1. Anatomy. Histology. Embryology. 2. Physiology. Biophysics. Biochemistry.	Second Year. Medical Biological Science.		**4** Embryology, Anatomy and Histology. Physiology, Biophysics and Biochemistry.				
Third Professional: 1. Anatomy, Limbs and Trunk. 2. Physiology and Pharmacology. 3. Elementary—Surgery. Medicine. Pathology and Bacteriology.	Third Year. Applied Medical Biological Science.	9	Tutorial Instruction in Medicine. Physical Signs Course.				
		10	Case Taking Under Supervision. Examination of Secretions.				
		11	**7** General Hospital. Indoor Medicine. From 11 a.m. to 12.30 p.m.				
		12					
		2	Anatomy Lecture.	Physiology.		Physiology.	Anatomy Lecture.
		3	Thorax and Abdomen.	Physiology.		Physiology.	Thorax and Abdomen.
		4	Dissections.	Physiology.		Physiology.	Dissections.
Fourth Professional: 1. Pathology. 2. Bacteriology. 3. Sugery and Surgical Anatomy. 4. Medicine and Applied Physiology.	Fourth Year. Abnormal Medical Biological Sciences.	9	Clinical Physiology.	Surgery Lecture.	Anæsthetics.	Clinical Pathology.	Medicine Lecture.
		10					
		11	**10** General Hospital. Surgical Out-Patients. From 10 a.m. to 12 noon.				
		12	*Post Mortem* Work.	*Post Mortem* Work.	*Post Mortem* Work.	*Post Mortem* Work.	*Post Mortem* Work.
		2	Pathology.	Bacteriology		Pathology.	Bacteriology
		3	Pathology.	Bacteriology		Pathology.	Bacteriology
		4	Pathology.	*Materia Medica.*		Pathology.	*Materia Medica.*
Final Professional, Part I.: 1. Medicine. 2. Surgery. 3. Midwifery and Gynæcology (written examination only, including Anatomy, Physiology and Pathology).	Fifth Year. Applied Normal and Abnormal Biological Science.	9	Tutorial and Ante-Natal Midwifery.	Clinical Physiology.	Clinical Pathology.	Tutorial and Ante-Natal Midwifery.	Use of Special Sense Instrument.
		10					
		11	**13** General Hospital. Out-Patient, Medicine and *Post Mortem* Work. From 10 a.m. to 1 p.m.				
		12					
		2	Midwifery Lecture.	Neurology Lecture.		Midwifery Lecture.	Neurology Lecture.
		3	Pelvis. Anatomy. Pathology. Embryology.			Women's Hospital.	
		4				Women's Hospital.	
Final Professional, Part II.: 1. Clinical Examination only. 2. Forensic Medicine—Ethics. Preventive Medicine, written and oral. Supplementary Examinations in March and August, giving three chances *per annum*.	Sixth Year. Two Terms. Special Biological Sciences.	9	Eye and Ear Hospital.	Children's Hospital.	Mental Hospital.	Skin Diseases.	Children's Hospital.
		10	Eye and Ear Hospital.	Children's Hospital.	Mental Hospital.	General Hospital.	Children's Hospital.
		11	Eye and Ear Hospital.	Children's Hospital.	Mental Hospital.	General Hospital.	Children's Hospital.
		12	**16** Eye and Ear Hospital.	Children's Hospital.	Mental Hospital.	General Hospital.	Children's Hospital.
		2	Forensic Medicine. Ethics and Preventive Medicine.	Fever Hospital.	Mental Hospital.	Forensic Medicine. Ethics and Preventive Medicine.	Children's Hospital.
		3	Operative Surgery, Surgery and Mechano-Therapeutics.	Fever Hospital.	Mental Hospital.	Operative Surgery and Mechano-Therapeutics.	Children's Hospital.
		4		Fever Hospital.	Mental Hospital.		Children's Hospital.

The black figures indicate the term of the complete course of five years and two terms.

Second Term.

Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
2 Biology, Physics and Chemistry in their Application to Medicine.				
5 Embryology, Anatomy and Histology. Physiology, Biophysics and Biochemistry.				
Tutorial Instruction in Surgery, Bandages, Instruments, Splints.				
Case Taking Under Supervision.				
8 General Hospital. Indoor Surgery. From 11 a.m. to 12.30 p.m.				
Surgical Lecture. Limbs.	Physiology.		Surgical Lecture. Limbs.	Physiology.
Anatomy.	Physiology.		Anatomy.	Physiology.
Limbs.	Physiology.		Limbs.	Physiology.
Therapeutics.	Surgery Lecture.	Vaccines. Serology.	Clinical Pathology.	Medicine. Lecture.
11 General Hospital. Medical Out-Patients. From 10 a.m. to 12 noon.				
Post Mortem Work.	*Post Mortem* Work.	*Post Mortem* Work.	*Post Mortem* Work.	*Post Mortem* Work.
Pathology.	Bacteriology		Pathology.	Bacteriology.
Pathology.	Bacteriology		Pathology.	Bacteriology.
Pathology.			Pathology.	
Tutorial and Ante-Natal Midwifery.	Clinical Physiology.	Clinical Pathology.	Tutorial and Ante-Natal Midwifery.	Radiology and Radium.
14 General Hospital. Indoor Surgery and *Post Mortem* Work. From 10 a.m. to 1 p.m.				
Midwifery Lecture.	Neurology Lecture.		Midwifery Lecture.	Neurology Lecture.
Pelvis. Anatomy. Pathology. Embryology.			Women's Hospital.	
			Women's Hospital.	
Children's Hospital.	Skin Diseases.	Mental Hospital.	Children's Hospital.	Eye and Ear Hospital.
Children's Hospital.	General Hospital.	Mental Hospital.	Children's Hospital.	Eye and Ear Hospital.
Children's Hospital.	General Hospital.	Mental Hospital.	Children's Hospital.	Eye and Ear Hospital.
17 Children's Hospital.	General Hospital.	Mental Hospital.	Children's Hospital.	Eye and Ear Hospital.
Forensic Medicine. Ethics and Preventive Medicine.		Mental Hospital.	Forensic Medicine. Ethics and Preventive Medicine.	Fever Hospital.
		Mental Hospital.		Fever Hospital.
		Mental Hospital.		Fever Hospital.

Third Term.

Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
3 Biology, Physics and Chemistry in their Application to Medicine.				
6 Embryology, Anatomy and Histology. Physiology, Biophysics and Biochemistry.				
Tutorial Instruction in Medicine. Physical Signs Course.				
Case Taking Under Supervision. Examination of Secretions.				
9 General Hospital. Indoor Medicine. From 11 a.m. to 12.30 p.m.				
Physiology.	Elementary Pathology and Bacteriology		Physiology.	Elementary Pathology and Bacteriology.
Pharmacology.			Pharmacology.	
Pharmacological Chemistry.			Pharmacological Chemistry.	
Clinical Physiology.	Surgery Lecture.	Venereal Diseases.	Clinical Pathology.	Medicine Lecture.
12 General Hospital. Surgical Out-Patients. From 10 a.m. to 12 noon.				
Post Mortem Work.	*Post Mortem* Work.	*Post Mortem* Work.	*Post Mortem* Work.	*Post Mortem* Work.
Pathology.	Anatomy. Head and Neck.		Pathology.	Anatomy. Head and Neck.
Pathology.			Pathology.	
Pathology.			Pathology.	
Tutorial Gynæcology.	Clinical Neurology.	Tutorial Fevers.	Tutorial Gynæcology.	Radiology and Radium.
15 General Hospital. Indoor Medicine and *Post Mortem* Work. From 10 a.m. to 1 p.m.				
Gynæcology Lecture.	Anatomy. Physiology. Pathology. Special Senses.		Gynæcology Lecture.	Anatomy. Physiology. Pathology. Special Senses.
Practical Obstetrics.				

SUGGESTED MEDICAL CURRICULUM.

By Professor R. J. A. Berry,
Dean of the Faculty of Medicine of the University of Melbourne.

(See The Medical Journal of Australia, January 1, 1927, page 28.)

Congress Notes.

Travelling Facilities.

DR. F. BROWN CRAIG, the Honorary Local Secretary for New South Wales of the second session of the Australasian Medical Congress (British Medical Association) informs us that as a result of representations made to the New South Wales Government Railways and Tramways certain concessions will be made to members attending the Congress and using the railways in New South Wales. The following letter from the Secretary of the department sets out the conditions under which these concessions may be obtained.

> With reference to your letter of the fourteenth instant concerning the fares of New South Wales delegates and wives to the Australasian Medical Congress to be held at Dunedin in February next, who desire to travel by rail to Melbourne on the forward journey and return to Sydney by steamer, I have to inform you that the issue of single tickets to Melbourne at two-thirds single fare is agreed to, subject to not less than six delegates making the journey from New South Wales.
>
> When returning from the Congress single tickets at two-thirds single fare will be issued at Sydney to the stations from which such delegates and their wives made the forward journey by rail to Melbourne.

The Union Steam Ship Company, Limited, announce the following sailings of ships from Sydney and Melbourne.

Sydney to Wellington—
- January 13, 1927, *Maunganui.*
- January 27, 1927, *Maunganui.*
- January 28, 1927, *Manuka.*

Melbourne to Dunedin, *viâ* Milford Sound and the Bluff—
- January 26, 1927, *Maheno.*

Melbourne to Wellington—
- January 5, 1927, *Maheno.*

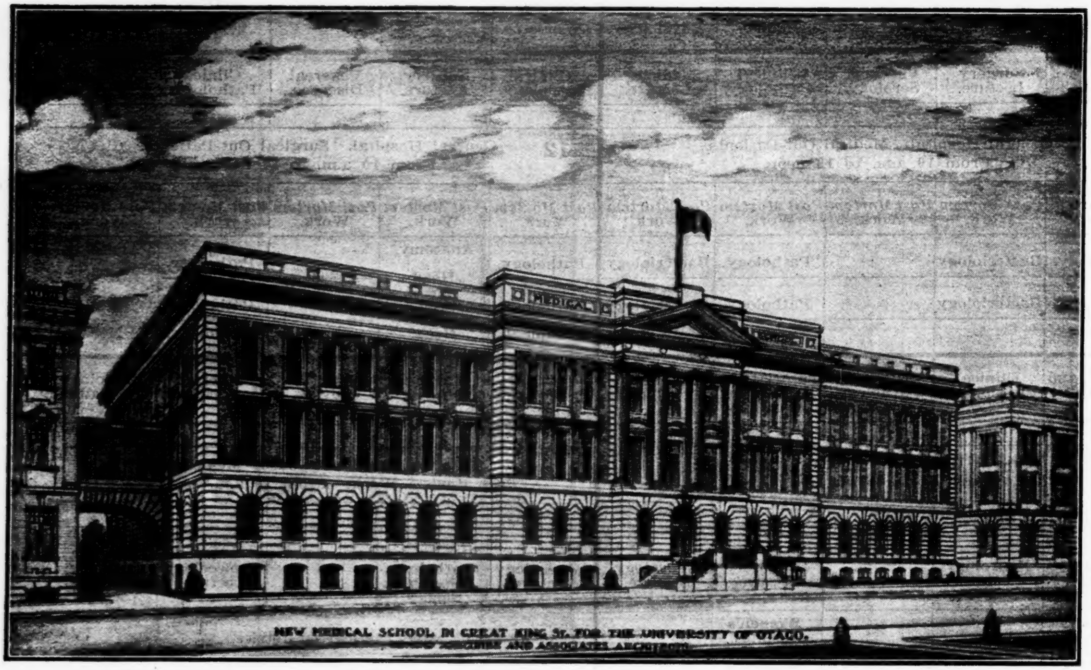
The Medical School, Otago.

Congress will meet in the Medical School buildings of the University of Otago. These buildings consist of north and south blocks of which the first floors are connected by a bridge.

The south block was built in 1916 and contains the departments of pathology, bacteriology and preventive medicine. At that time the subjects of anatomy and physiology were taught in the main University buildings in the older part of which the Otago Medical School was founded in 1876.

In the spring of 1919 the Council of the University of Otago decided to erect the present north block and to transfer to it the departments of anatomy and physiology.

After many delays owing to the difficulty of securing the necessary funds, the building was begun in 1924. There were many reasons which led the University Council to embark on this building programme, including the increased number of medical and dental students presenting themselves at this time, the need of more suitable accommodation for histology (now taught in the anatomy department), for biochemistry and for research work in general. The adoption of the six year curriculum and the desirability of a closer cooperation between the hospital and the more fundamental subjects of the medical curriculum were also important arguments. It was found impossible to provide the necessary accommodation by extending the old buildings and these were in fact required for other purposes. Every new building of this kind has its own special architectural problems, but certain guiding principles govern all such cases. Two of these are: (i.) That each department should be as far as possible a compact unit, but should be in free communication with the others by means of stairs or lifts, (ii.) that it should be possible to alter the individual rooms without difficulty at a later date.



NEW MEDICAL SCHOOL IN GREAT KING St. FOR THE UNIVERSITY OF OTAGO.

These requirements have been met by devoting the whole of the upper floor to anatomy and histology, the first floor to biochemistry with lecture rooms, laboratories and so forth for physiology, the ground floor to experimental physiology and pharmacology with rooms for medicine and surgery and common rooms for students. In the basement are the mortuary, boiler room, store rooms, animals' rooms and other apartments.

The roof and floors are supported on pillars and beams carried right up through the building, the partition walls carrying none of the weight, so that alterations in size of the rooms can be carried out with ease if necessary.

The Anatomy Department.

In the basement are mortuary, workshop and store room.

On the second floor are the dissecting room with *annexe* for operative surgery and massage students, the museum, departmental library, two lecture theatres and retiring rooms.

On the third floor are the histology class room, preparation and research laboratories.

The Physiology Department.

On the first floor there are the following rooms: Professors' and assistants' retiring and research rooms (five), library, room for clinical chemistry, food analysis, gas analysis, nitrogen estimations, histology (physiological), polarimeter, senior and junior chemical work, preparation; also two lecture rooms, tutorial room, diagram room and lecture apparatus room.

In the junior and senior chemistry rooms, each student has four and six feet of bench frontage respectively and as far as possible each student will have his own working place with water, gas and share of a sink.

On the ground floor there is a large room for junior experimental physiology (provided with the usual shafting), a small demonstration theatre for preliminary instruction on modes of procedures, a workshop, preparation room and apparatus store. Senior students will do advanced experimental work and practical pharmacology in the adjoining rooms; there is also a room for physiology of the special senses and an operation room.

The assistant in charge of this division of the work has a small retiring room and a research room. The ground floor also includes retiring rooms and laboratories for the Professors of Medicine, Clinical Medicine and Surgery.

In the basement besides the usual store rooms and so forth, there are rooms for the electrocardiograph, X ray work, centrifuges and drying, rat room (for vitamin work), aquarium, calorimeter and animal room.

Correspondence.

"QUACKERY."

SIR: I have read with interest Dr. Prior's reply to my letter entitled "Quackery," but it has not at all shaken my opinion that with the exception of thyreoid and parathyreoid, no endocrine substance is of any value if introduced into the human stomach.

In the case of adrenalin, pituitrin and "Insulin," Dr. Prior can easily satisfy himself that they do not produce their characteristic physiological effects if swallowed.

Pure spasmodic asthma is almost invariably promptly relieved by the injection of a few drops of 1 in 1,000 solution of adrenalin chloride. If Dr. Prior will show me one patient who is constantly relieved by the oral administration of fifteen times that quantity, I will retract my statement with apologies.

One patient of mine who was always relieved by hypodermic injection of a few drops, thought to dispense with doctor's aid and bought some adrenalin to use herself. She discovered that drachm doses when swallowed had no effect upon her asthma. I acknowledge that one case proves very little, but Dr. Prior doubtless encounters many cases of this common disease. Let him put the matter to the test.

Pituitrin again has well known constant and powerful physiological effects. Can Dr. Prior produce these effects by oral administration of pituitrin? If he does not wish to test it on human beings, let him go to the laboratory of the University and try it on a dog. If he succeeds in producing these effects with even large doses of pituitrin, administered through a stomach tube to eliminate absorption from the buccal mucous membrane, I will retract and apologise.

"Insulin" produces profound and easily measurable effects upon carbohydrate metabolism. Can Dr. Prior produce these effects by oral administration? The test can be made in a few hours with the assistance of any competent pathologist.

With regard to other endocrine substances we cannot so easily and simply apply tests, but I maintain that we have no proof that they achieve any results by oral administration.

Certainly feeding with suprarenal body is a total failure in Addison's disease and feeding with pituitary body is a total failure in *dystrophia adiposo-genitalis*.

With regard to the effects of suggestion Dr. Prior has totally misunderstood me. As factors in the recovery of patients undergoing medical treatment I should place the *vis medicatrix naturæ* first and a long way first. I should place suggestion easily second and the efforts of the physician third. This is the reason why practitioners who know exceedingly little about their work, are able to achieve large practices and why many quacks are able to make incomes greatly in excess of that of the average medical man.

Did not Dr. Prior notice that I acknowledged in my letter that "endocrine therapy" *plus* suggestion no doubt achieved wonderful cures? And I hazarded the opinion that tablets of mud *plus* suggestion would do the same.

With regard to surgery Dr. Prior gets rather off the track. After telling me that I "deride" suggestion, whereas I have done exactly the opposite in assigning to it the brilliant cures of the endocrinist, he asks me if I object to "suggestion combined with surgery." As a surgeon I have no objection to it, but trust that I have little or no need of it. I have never known suggestion to cure gall stones, hernia, lipoma, talipes or enlarged prostate, but I will undertake to cure the vast majority of patients suffering from these diseases, however strenuously Dr. Prior may suggest to them that the operation will be a failure.

I do not claim that surgeons are free from autosuggestion or even sometimes from humbug. I am convinced, for example, that 90% of the "chronic appendixes" removed in this city during the last ten years had nothing the matter with them and no connexion with the patients' symptoms.

If my letter appeared to anybody to be dogmatic I am sorry, for I am constantly oppressed by the consciousness of my own ignorance and impotence in dealing with the diseases which I endeavour to treat.

I think that the most amazing phenomenon that I have encountered in life, is the astounding credulity of mankind. We medical men share this with the rest of mankind, hence my protest against the tablets of brain, spleen, prostate, testicle and other delicacies with which the market is flooded, and against the impudence—too often successful—of the manufacturers who try to impose this rubbish upon us.

Finally I offer a suggestion. It has been shown that "pituitrin" can be absorbed fairly well from the rectum. Is it possible that other endocrines might be successfully introduced into the blood by the same means? Possibly this has been tried, though I have not seen any reference thereto.

Apologizing for taking up so much space.

Yours, etc.,

ARTHUR S. VALLACK.

230, Miller Street, North Sydney,
Undated.

FOCAL INFECTIONS.

SIR: It is with great pleasure I read Rosenow's article in the November 27 number of your journal, where, in a very modest way he has put the gist of all the work he has been doing for the last few years. His results have been so remarkable that many have considered that he has somewhat exaggerated them, yet if we take an ordinary case of neuritis from some focal infection, where the bacteria gain entrance to the blood, we find there is a specific affinity for nerves and other tissues are not necessarily involved. It does not require any great tax on our imagination to conceive that if the same strain of organisms are put into the blood stream of another animal, the same affinity will hold good for its nervous system. There has been in the past a tendency to look for new

organisms for certain conditions, but now elective localization has been established we have to realize that it is possible to and probably does affect every tissue of the body where blood is accessible. Having worked hard during the last few years to try and get the importance of focal infections and their relation to disease established, I feel that Rosenow's article will do much to stimulate it. Drastic alterations in our ideas on medicine and treatment have to be made, we have to scrap years of teachings and adjust ourselves to the new view point.

His views on the question of dental infection are very drastic, but are only such as clinical evidence has forced us to believe. It is wasting time taking films of dead teeth as many are lulled into a state of false security on finding roots showing no apical abscesses. We have yet to know what can be done in the freeing patients of gingival infections. My own experience is that the gums look better for treatment but the patients still continue to suffer with the same aches and pains till the teeth are extracted. The improvement in health following extractions even where little infection is visible is often remarkable.

Yours, etc.,

SYDNEY PERN, M.R.C.S., L.R.C.P.

12, Collins Street, Melbourne,
December 10, 1926.

Medical Appointments.

Dr. H. C. R. Darling (B.M.A.) has been appointed Honorary Surgeon at the Rookwood State Hospital and Asylum, New South Wales.

* * * *

Dr. J. A. Lawson (B.M.A.) has been appointed Honorary Assistant Surgeon at the Rookwood State Hospital and Asylum, New South Wales.

* * * *

Dr. A. Chapman (B.M.A.) has been appointed Honorary Dermatologist at the Rookwood State Hospital and Asylum, New South Wales.

* * * *

Dr. Robert Mitchell Mackay (B.M.A.) has been appointed Chief Medical Referee to the Workers' Compensation Commission, New South Wales.

* * * *

Dr. William Ellis George (B.M.A.) has been appointed Medical Officer-in-Charge of the Bureau of Medical Inspection, Broken Hill.

* * * *

Dr. James Alexander Smeal (B.M.A.) has been appointed Certifying Medical Practitioner at Canterbury, Victoria, under the provisions of the *Workmen's Compensation Acts*.

* * * *

Dr. Walter Bartlett Chapman (B.M.A.) has been appointed Official Visitor to the Reception House, Townsville, Queensland.

* * * *

Dr. William Wallace Cameron (B.M.A.) has been appointed Government Medical Officer at Mudgee, New South Wales.

* * * *

Dr. R. H. Fletcher (B.M.A.) has been appointed Quarantine Officer at Gladstone, Queensland.

* * * *

Dr. Alfred Austin Lendon (B.M.A.) has been appointed President of the Medical Board of South Australia.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants *locum tenentes* sought, etc., see "Advertiser," page xxii.

ADELAIDE CHILDREN'S HOSPITAL: Medical Superintendent.
UNIVERSITY OF ADELAIDE: Elder Professor of Anatomy.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	Contract Practice Appointments at Ceduna, Murat Bay and other West Coast of South Australia Districts.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia. Yarloop Hospital Fund.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

JAN. 11.—New South Wales Branch, B.M.A.: Council (Quarterly).
JAN. 13.—Victorian Branch, B.M.A.: Council.
JAN. 14.—Queensland Branch, B.M.A.: Council.
JAN. 17.—New South Wales Branch, B.M.A.: Organization and Science Committee.
JAN. 18.—New South Wales Branch, B.M.A.: Ethics Committee.
JAN. 18.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JAN. 25.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JAN. 26.—Victorian Branch, B.M.A.: Council.
JAN. 28.—Queensland Branch, B.M.A.: Council.
FEB. 8.—New South Wales Branch, B.M.A.: Ethics Committee.
FEB. 15.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

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